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Editorial Staff

Geo. S. Demuth and E. R. Root, Editors — H. H. Root, Assistant Editor — H. G. Rowe, M'n'g Editor

Honey--Wanted--Honey

We are always in the market for honey. Mail fair-sized sample of extracted, state how much you have, how packed and your lowest price, delivered Cincinnati or f. o. b. your station. Comb honey, state how graded and how packed.

C. H. W. Weber & Company

Cincinnati, Ohio

Mr. Beekeeper

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. **We pay the highest cash and trade prices for beeswax. Write for free illustrated catalog today.**

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WHITE GLASS JARS.
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COMB HONEY CARTONS.
PARCEL POST CANS.
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WRITE FOR CIRCULAR GIVING PRICES ON HONEY CONTAINERS.

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How Will You Pack Your Crop?

Immediate Shipment

PAILS.

2½-lb. cans, per carton of 100..$4.25
5-lb. pails, per carton of 100... 6.75
10-lb. pails, per carton of 50.... 5.00
10-lb. pails, per carton of 100... 9.75

GLASS.

White Flint Glass Screw-top Jars, Round and Tall, Packed 2 doz. in re-shipping case.

1-lb., per case in 1-case lots.....$1.35
1-lb., per case in 10-case lots.... 1.25
½-lb., per case in 1-case lots.... 1.15
½-lb., per case in 10-case lots.. 1.05

CANS.

Used 60-lb. square cans in crates, packed 2 cans to crate. (Good as new.)

1 case, 2 60-lb. cans, per case..$0.70
10 cases, 2 60-lb. cans, per case. .65
Subject to being on hand.

BARRELS.

Good tight honey barrels which will hold from 600 to 700 pounds of honey, $3.00 each.

QUEEN BEES.

June and July Prices.

Sel. Untested Italian Queens, $1 each.
Sel. Tested Italian Queens, $2 each.

COMB FOUNDATION.

Medium brood (average 8 sheets to the pound.)

1-lb. lots .....$0.77 per lb.
5-lb. lots ..... .65 per lb.
50-lb. lots ..... .58 per lb.
100-lb. lots ..... .50 per lb.

Thin surplus (average 28 sheets to the pound).

1-lb. lots .....$0.85 per lb.
5-lb. lots ..... .70 per lb.
50-lb. lots ..... .65 per lb.

All comb foundation made from pure domestic beeswax. No foreign wax or substitute used in Muth's Comb Foundation. Write for prices on other weights.

SECTIONS.

			Grade 1.	Grade 2.
100	4¼x1⅞	beeway.	$1.35	$1.20
500	4¼x1⅞	beeway.	6.40	5.75
1000	4¼x1⅞	beeway.	12.60	11.25
100	4¼x1½	plain...	1.20	1.10
500	4¼x1½	plain...	5.75	5.00
1000	4¼x1½	plain...	11.25	9.90
100	4x5x1⅜	plain...	1.20	1.10
500	4x5x1⅜	plain...	5.75	5.00
1000	4x5x1⅜	plain...	11.25	9.90

Write for prices on other sizes.

We need beeswax, great quantities. Ship your beeswax to us for quick remittance. We are paying 28c per pound in cash delivered to Cincinnati for choice yellow beeswax free from dirt. Send your old combs for rendering into beeswax. Honey season is on. Send a sample of your honey and tell us how much you want for it. No waiting for your money. We remit the day shipment is received.

THE FRED W. MUTH CO.

"THE BUSY BEE MEN"

CINCINNATI, O.

PEARL AND WALNUT STREETS

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (first half of June).

CALIFORNIA POINTS: Southern California.—Weather dry during the past month, and bees are barely making a living. Buckwheat is coming fairly well, and many beekeepers are planning to move to buckwheat locations. The outlook for a surplus from sage is doubtful. The orange honey has all been gathered, with varying yields, depending, as the nectar flow was good, largely on the strength of the bees, many of which were a month behind the oranges. One experienced reporter estimates an average crop this year of 20 lbs. Market very dull, some shippers offering 10½c per lb. for white orange, others not making offers. Few sales reported of white orange at 16c per lb. in single 60s, 15c in ton lots, and some low as 10-11c per lb. Beeswax has sold at 23c per lb. Many beekeepers discouraged, and want to sell out. In Imperial Valley high winds have been unfavorable for bees gathering nectar. But with good weather a yield of 75 lbs. honey is expected. Northern California.—Very warm and dry. Star thistle will bloom in a few days but yield will be light as a result of the long drought. Some report nectar coming in; but many are feeding. Few sales star thistle, single 60s 14c, ton lots 12c per lb.

PACIFIC NORTHWEST.—Heavy flow of nectar reported from first flow alfalfa, and along the coast Hungarian vetch and alsike are still yielding heavily. In some of the fruit sections, however, much feeding has been required, and late frosts have been harmful. The market is reported in a healthy condition. Sales reported of white extracted, carlots, 9c per lb., ton lots, 10c; single 60s, 11-12½c, small pails wholesale, 14c per lb. Beeswax, large lots, 25c; small lots, 30c per lb.

INTERMOUNTAIN SECTION. — Spring losses heavier than anticipated. Chilly, rainy or cloudy weather has in most states retarded alfalfa, which is 10 days to two weeks late and kept bees in hives, so that they are barely making a living, and some are being fed heavily to save brood. Nevertheless, prospects look good except in Utah and Idaho. Some honey secured from dandelion, willows and fruit bloom, and first extracting, of fine quality honey, reported in Nevada. Heavy swarming reported in Montana. Much sweet clover winter-killed in Utah. Supplies of honey extremely light. Few cars white extracted white sweet clover and alfalfa have sold recently at 9-9½c per lb., and 1 car light amber at 8⅞c; ton lot, white, 9c; single 60s, 10-13½c, and few small pails wholesale at 12-15c per lb. White comb No. 1 has moved lightly at $5.00 per 24-section case; No. 2, $4.50. Beeswax, 23-24c per lb.

ARIZONA POINTS.—Mesquite crop very light, due to too much wind, cold weather and activity of caterpillars. Second-cutting alfalfa in full bloom. Colonies in fair condition. Few sales light amber extracted reported in 60-lb. cans at $5.00 per can.

TEXAS POINTS.—With fair weather, honey plants are generally in good condition, and bees have been working busily on horsemint, and mesquite is due to bloom shortly. Catclaw and guajilla are finished. Only occasional sections are pessimistic over the crop outlook, and in some areas 50-75 lbs. surplus have already been taken off. Light-colored extracted has sold in small pails at 10-15c, mostly 14-15c per lb.; bulk comb at 16-18c in 12/10s and 17-19c per lb. in 12/5s. Light-colored beeswax has sold at 23-25c per lb., dark 18-20c per lb.

PLAINS AREA.—Bees building up well. White clover is blossoming profusely, but weather has been too cold and wet for bees to work much on it. With favorable weather a good crop of clover and basswood honey should be secured. More feeding has been necessary than for many years. Yellow wax has sold at 23-24c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Colonies weak and spring dwindling has been severe in some sections. Heavy feeding has been necessary in many cases. It is thought that some colonies will be in shape for clover flow, which is two weeks to a month later than usual and heading out well. Good crop anticipated also from basswood and raspberries if bees are strong enough to gather it. Flow from dandelions was satisfactory and bees are working somewhat on wild cherries. Supply of honey nearly exhausted. Only a few sales reported.

NORTHEASTERN STATES. — Bees have been slow to build up as a result of the cold, wet spring, which has retarded the season 2-3 weeks, and many have fed to keep up brood-rearing. Some apple trees still in bloom. Dandelion and fruit bloom yielded less than usual as bees could not get out to work on them. Clover looks fairly good, but is very late. Many bees offered for sale in Pennsylvania. Honey nearly cleaned up. Few sales white clover, 60-lb. cans, 12c; large lots, 10-11c, light amber and buckwheat single 60s, 11c. Beeswax has sold at 28-29c per lb.

SOUTHEASTERN STATES.—Georgia has secured a good crop of high-grade honey, and considerable has been sold. The colonies are still working on sweet bay and saw palmetto. Cloudy, rainy weather has prevented bees in Alabama from working much of the time. White clover flow still on. Excellent crop secured in Florida from saw palmetto and gallberry, which are now over. Tupelo flow was late and not as heavy as usual. In South Carolina sourwood is starting to bloom. Honey has sold well at the following prices: Extracted, white, 60-lb cans, 17c; ton lots, 13-16c; some 10c; carlots quoted 10-12c per lb.; bulk comb, 15-18c per lb.; amber, barrels, 6-8c; light amber, 8-10c per lb. Comb, white, $5.00; light amber, $4.50 per case; beeswax, 25c per lb.

PORTO RICO.—Fair rainfall for May should result in average flow in hill section. Extraction to a considerable extent is going on in coast apiaries. The beekeepers are receiving 68-72c per gal. in barrels of about 600 lbs.

Telegraphic Reports from Important Markets.

CHICAGO.—No large arrivals since last report. Demand and trading very light for last two weeks on both comb and extracted. Supplies of both comb and extracted very light. Market very dull. Extracted: Sales to bottlers and confectioners, Iowa, white clover, 10-11c; light amber mixed flavors, 9-10c; dark mixed, 7-9c. Comb: Sales to retailers, 24-section cases Wisconsin, white clover and Colorado; white sweet clover fancy, $4.50-5.00; No. 2, $4.00-$4.25; light amber, $2.00-3.00. Beeswax: Trading very light. Market very dull. Illinois, light, 27-29c, some 30c; dark, 24-27c.

NEW YORK.—Since last report 65 bbls. Porto Rico, 11 boxes Palestine arrived. Receipts limited. Old crop supplies light. Demand moderate, market steady. Sales to jobbers, wholesalers, bakers, bottlers and confectioners, New York, white clover, 11-12c; buckwheat, few sales, 8c; California, light amber sage, 13½c; white orange, 13-15c; mixed flavors, 11½-13c; Florida, tupelo light, 13-13½c. Comb: Sales to retailers, Eastern, 24-section cases white clover fancy, $6.00-6.50; No. 1, $5.00-5.50; No. 2, $4.50-5.00. Beeswax: Since last report 100 bags Holland, 50 bags Cuba, 36 bags Porto Rico, 4 bags, 1 seroon Santo Domingo, 10 bags Chile, 34 bags Brazil arrived. Supplies light. Market steady. West

Indies, light, 30-31c; dark, 24-26c; Chile and Brazil, light, 30-32c; Africa, dark, 25-27c.

H. C. TAYLOR,
Chief of Bureau of Markets.

Special Foreign Quotation.

LIVERPOOL.—Since our last report there has been a considerable amount of activity in this market, supplies having come forward more plentifully. The arrivals of Chilian into Liverpool have been 1001 barrels. We make the value in American money for good honey to be 11 cents per lb. There is a good demand of beeswax at steady prices. The equivalent value in American currency is 31c per lb.

Liverpool, Eng., June 4. Taylor & Co.

The A. I. Root Company's Report.

Since our last report we have purchased about 5000 pounds of white clover extracted, in small lots, at 9½c per pound; about 1000 pounds of buckwheat extracted at 7c per pound, and 9000 pounds of dark Porto Rican extracted at 95c per gallon. All prices f. o. b. shipping points. No comb honey has been purchased. The car of Michigan amber extracted honey reported as purchased at 7½c last month was not delivered; and in the case of the car of California amber reported as purchased at 7c, the shipper failed to deliver the honey purchased.

Honey Producers' Monthly Report.

Early in June we sent to actual honey producers the following questions:

1. How does the honey flow thus far (if any) compare with normal in your locality? Give answer in per cent.
2. What is your estimate now of the 1924 honey crop as compared with the average for your locality? Give answer in per cent.
3. What prices are producers in your locality expecting to receive for the new crop at their station if sold in large lots, carload or entire crop? (a) For extracted honey per pound? (b) For comb honey, fancy and No 1 per case?
4. What are prices to retailers in small lots? (a) Extracted honey in 5-lb. pails or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1 per case?
5. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1 per section?
6. Is there any of last year's honey left in the hands of producers in your locality? If so, what per cent of the crop is carried over?

The answers, as returned by our honey and bee reporters, are as follows:

State.	Reported by:	Honey Flow.	Honey Crop.	In carlots. Ex.	In carlots. Comb.	In small lots. Ex.	In small lots. Comb.	Retail prices. Ex.	Retail prices. Comb.	Unsold.
Ala.	W. D. Achord			$	$	$	$	$	$	
Ala.	J. M. Cutts	80	60							0
Ala.	J. Clay Dickman	100	100			.90		1.10		0
Ark.	Jas. Johnson	80						1.00		0
Ark.	J. V. Ormond	100	100			1.25				0
Cal.	M. C. Richter	0	0					1.50		5
Cal.	M. H. Mendleson	0	0							
Cal.	L. L. Andrews	20	25	.13		1.00		1.00		0
Cal.	M. A. Saylor	75	75	.07½	3.60	.70	4.00	.90	.20	0
Col.	B. W. Hopper	100	75							0
Col.	J. A. Green	100	90	.10		.75		.95	.25	10
Conn.	Allen Latham	100				1.00	6.50	1.25	.35	5
Conn.	A. W. Yates	25	125	.12	6.00	1.00	7.00	1.30	.40	1
Fla.	C. C. Cook	175	150	.08		.80		1.00		0
Fla.	Harry Hewitt	50	50	.10		.75		1.00		0
Ga.	J. J. Wilder	135	150	.13¾	4.75	.80	5.25	1.00		0
Ill.	Dr. A. C. Baxter	70	70			.85	5.50	1.25	.30	0
Ind.	Jay Smith	150	150			1.05		1.25		0
Ind.	T. C. Johnson	50	75			1.00	6.00	1.25	.30	0
Ind.	E. S. Miller	0				.80	5.75	1.00	.30	5
Iowa.	W. S. Pangburn		75	.10		.75		.90		20
Iowa.	E. G. Brown		75			.75		1.12½		2
Iowa.	Frank Coverdale	100	100	.11	3.75			.75	.30	0
Kan.	J. A. Nininger	75	100			.75	5.00	.95	.25	0
La.	E. C. Davis	100	100	.08½	6.00	.65	6.00	.92½	.35	0
Md.	S. G. Crocker	125	150	.11	5.00	1.00	5.50	1.25	.32½	5
Mich.	Floyd Markham	25	100			.80		1.25		0
Mich.	Ira D. Bartlett	0	75			.75	6.00	1.00	.35	5
Neb.	J. H. Wagner	90	90			.80	6.00	1.10	.30	0
Nev.	T. V. Damon		70	.13	4.50	.75	5.00	1.00	.35	0
N.Y.	N. L. Stevens	75	90	.09						5
N.Y.	Geo. B. Howe	10				.75		1.00		0
N.Y.	F. W. Lesser	25						1.00		0
N.C.	W. J. Martin	90	90	.10	3.50	1.00	4.50	1.25	.25	0
N.C.	C. L. Sams	100	100	.12	4.50	1.00	5.00	1.25	.30	0
N.C.	C. S. Baumgarner	110	110			1.15		1.40	.30	0
Ohio.	R. D. Hiatt	25	75			1.00	6.00	1.40	.35	10
Ohio.	Fred Leininger		75							0
Okla.	Jos. Heueisen	100	80			1.00	5.00			0
Okla.	C. F. Stiles	10	5							0
Ore.	H. A. Scullen	120	120			1.10		1.10	.27½	5
Penn.	D. C. Gilham	85				1.05	7.20	1.40	.40	10
Penn.	Harry Beaver	25								0
S.C.	Prof. A. S. Conradi	100	100					1.25	.35	0
S.D.	L. A. Syverud	90	90							0
Tenn.	J. M. Buchanan	125	125							0
Tex.	H. B. Parks	110	100	.09		.71		1.00		0
Tex.	J. N. Mayes	125	125	.11		.65		.75		0
Utah.	M. A. Gill	50	50	.09	4.00			.75	.25	0
Vt.	J. E. Crane	50	100	.15	5.00			1.25		0
Va.	T. C. Asher	95	90		6.00	1.10	6.00	1.25	.30	0
Wash.	W. L. Cox	85	85							10
Wash.	G. W. B. Saxton	100	100	.10		.65		.75		50
W.Va.	T. K. Massie	10	40			1.00		1.25	.37½	0
Wis.	E. Hassinger, Jr.					.80		1.00		1
Wyo.	Chas. H. Ranney	100	100	.09		.65		.85		0

Honey Containers

Friction-Top Pails

	25	50	100	200	500	1000
5-lb.	$2.00	$3.65	$7.00	$13.75	$33.00	$64.00
10-lb.	3.00	5.25	10.25	20.00	48.00	94.00

Above pails are packed 50 to carton and will keep bright and clean until time of using. Above prices are f. o. b. cars Lansing or Baltimore as you prefer. Our 2½-lb. cans are packed 60 to carton, and are $2.80 per carton, 5 cartons for $13.25, 10 cartons for $25.00.

60-lb. cans, 2 cans to case, f. o. b. cars **Lansing.**		60-lb. cans, 2 cans to case, f. o. b. cars **Detroit** or **Chicago.**	
Per case	$1.25	50 cases for	$ 53.00
10 cases for	12.00	100 cases for	105.00
25 cases for	29.00	200 cases for	200.00

"A" grade tin paste for labels, per pint, 25c; quart, 45c; gallon, $1.50. Postage extra.

Glassware

	1 case.	10 cases.	30 cases.
6½-oz. tumbler, 48 to case	$1.35	$13.00	$37.00
16-oz. Round Jars, 24 to case	1.30	12.50	36.00

Corrugated Paper Shipping Cases

These cases provide an inexpensive package for handling comb honey. They are partitioned so that each section is in its own compartment. They fill railroad requirements but must be crated for shipment. Corrugated paper shipping cases holding—

	10	50	100
24 4¼x4¼x1⅞-inch sections	2.25	$11.00	$21.50
24 4¼x4¼x1½-inch sections	2.00	9.75	19.00
24 4 x5 x1⅜-inch sections	1.95	9.50	18.00

We also furnish lithographed honey pails, cartons for comb honey, display and wood comb honey cases.

M. H. HUNT & SON

510 North Cedar Street. *Lansing, Michigan*

Root QUALITY

QUEENS

KNOWN THE WORLD OVER AS THE BEST

July is the best month to requeen your colonies. By requeening at this time you will be getting your colonies in excellent condition for the fall honey flow and successful wintering. To secure the largest yields and make the most profit from your bees you should requeen with Root "Quality" Queens. They are prolific, vigorous, and produce colonies of bees that are gentle, hardy, disease-resistant and excellent honey-gatherers.

QUEEN PRICES

Quantity:	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 up.
Untested	$1.50 ea.	$1.35 ea.	$1.25 ea.	$1.10 ea.	$1.00 ea.
Select Untested	2.00 ea.	1.80 ea.	1.70 ea.	1.55 ea.	1.45 ea.
Tested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Select Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.

OUR GUARANTEE ON QUEENS

We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead, provided the beekeeper receiving the dead or unfit queen notifies us and returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

ROOT QUALITY BEES

The best beekeeping authorities agree with us in the opinion that the shipping of bees on combs containing honey and brood invites the spread of disease. We are now shipping bees only in combless packages, except in carload quantities under special conditions.

	1-9 pkgs.	10-24 pkgs.	25 up, pkgs.
2-lb. pkg. of bees by express	$6.00 each.	$5.50 each.	$5.00 each.

Add price of queens wanted to package price given above. Large quantity lots quoted on application. These prices are F. O. B. shipping point.

BEES AND QUEENS ARE NOT SHIPPED C. O. D.

THE A. I. ROOT COMPANY

WEST SIDE STATION, MEDINA, OHIO.

Honey Packages

GENUINE LITHOGRAPHED PAILS

Made in four beautiful colors. Furnished in the 2½-pound, 5-pound and 10-pound sizes. The only RUST-PROOF honey package on the market today. Your name PRINTED (not stenciled or stamped) on the cans without charge in lots of 100 or more. Sample 5-pound pail by parcel post for 20c in stamps. We use these pails exclusively in packing DADANT HONEY.

Our lithographed pails are enameled throughout, inside, outside, top and bottom. They are really **RUST-PROOF**. They will not corrode from contact with honey or water, and can be used again and again. No other pail on the market offers you this wonderful opportunity to advertise your honey continuously.

PLAIN PAILS AND CANS

Our friction-top cans and pails are shipped in DUST-PROOF cartons. Cans will reach you CLEAN and in good shape to pack your honey. Our reshipping cases for 12 5-lb., 24 2½-lb., and 6 10-lb. are especially made and will carry honey safely. The 60-lb. cans are packed in strong cases with real hand holds. A cheap light case is the poorest advertisement for your honey.

GLASS JARS

Famous Diamond I jars. None better. Clear glass—beautiful packages. Made by one of the largest glass factories in the world.

COMB HONEY CARTONS

When each section of honey is packed in an individual carton, it is kept free from dust and dirt. Honey is always attractive and brings a higher price. New design. Sample, 5c.

COMB HONEY SHIPPING CASES

All wood, glass front and corrugated. **Send for complete price list—tell us what you need. We can save you money.**

Dadant & Sons, Hamilton, Ill.

GLEANINGS IN BEE CULTURE

JULY, 1924

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim and we trust no one will hesitate to give any facts from experience, because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture, January 1, 1873.

Dr. Brady's Apology.

IN a later article Dr. Wm. Brady has apologized to American beekeepers for his misstatements concerning the purity of honey sold on the markets in this country as mentioned on page 283 of our May issue.

Unfortunately for both Dr. Brady and the beekeeping industry, instead of apologizing like a man for the damage he has inflicted, he so worded his apology as still to leave the inference that extracted honey is adulterated, evidently in an effort to "save his face."

He also makes another inexcusable blunder in his apology when he says "the so-called pure-food law is a joke." Such a statement puts Dr. Brady in the class with those who would destroy the effectiveness of our laws by ridicule in the minds of intelligent readers whether or not that is his purpose. Dr. Brady certainly can not help knowing that the federal pure-food law, together with the various state pure-food laws, is safeguarding the health of the nation by prohibiting the sale of adulterated and injurious food, and, like the prohibition law, instead of being a joke, is one of the great blessings of the century. Every beekeeper should again write to the editors of the papers publishing the Brady articles, protesting against the harm done to the honest vocation of beekeeping by his continued implication that our product is not pure. Perhaps in this way he can be taught that he can not inflict injury upon an honest and highly beneficial industry with impunity.

Dr. Phillips to Begin New Work.

AFTER 19 years of continuous service in beekeeping work in the Bureau of Entomology, U. S. Department of Agriculture, Dr. E. F. Phillips will leave government service this fall. In this issue, beginning on page 440, there is a brief summary of some of the work he has accomplished during these 19 years of service. Our readers will be pleased to learn that Dr. Phillips is not leaving beekeeping in leaving the bee-culture office at Washington, and that his scope of usefulness to the industry may even be increased in his new work. Following is his letter announcing his plans:

Washington, D. C., June 6, 1924.

Dear Mr. Demuth:

I beg to announce that at the close of the present summer season I shall leave the service of the Bureau of Entomology to accept a Professorship of Apiculture in Cornell University. I shall remain in the Bureau of Entomology during the summer to continue the special work already begun, and shall move to the new work some time in late September. After October 1 my address will be: Department of Entomology, Cornell University, Ithaca, New York.

I wish to express my hearty appreciation of the co-operation which I have received from beekeepers in all parts of the United States during the nineteen years that I have had supervision of the beekeeping work of the Bureau of Entomology. Without such support, the efforts of the laboratory would have been much less effective. In taking up an entirely new line of work, I shall greatly miss the intimate associations with beekeeping friends in all parts of the country, but I shall at all times be happy to co-operate with them in their various problems, in so far as I am able and as is consistent with my new duties. My time is to be devoted to research work in beekeeping and to the training of advanced students in scientific beekeeping, a feature in American beekeeping which we all recognize as in need of advancement and encouragement. I shall not be concerned with the teaching of elementary beekeeping.

I ask your cordial support and encouragement of my successor as Apiculturist, whoever he may be. I feel confident that the beekeeping work of the Bureau of Entomology will be continued without interruption and that every effort will be made to assist the beekeepers of the country through investigations of the problems with which they are constantly confronted. When a decision is reached regarding the choice of the Apiculturist, an announcement will be sent you.

With added expressions of thanks for your personal consideration and co-operation, I am

Cordially yours,

E. F. PHILLIPS.

Apiculturist.

THE unfavorable weather during the greater portion of May and extending into June has wrought havoc with colonies not abundantly supplied with stores. Colonies that were in splendid condition the first of May have been reduced to weaklings unless they were fed by the beekeeper or were unusually well supplied with stores carried over from last season. The cold wet weather that stopped or retarded brood-rearing in colonies not sufficiently supplied with stores has had a beneficial effect upon the clover so that throughout the most of the clover regions this splendid honey plant now gives better promise than for many years.

Effect of Cool Wet Weather in May.

The remarkable thing is the way the colonies built up in spite of the adverse weather when supplied with sufficient food. The Editor made his first visit to his apiaries during the week beginning June 9, where he found a striking difference in colonies still having some old honey left, and in those which had used practically all of their stores. In many cases the food chambers had been almost emptied apparently some time in May, resulting in a small field force and a large amount of brood at the time of this visit. These colonies can not possibly take advantage of the early part of the honey flow; and unless the honey flow is of long duration they can not produce much surplus. On the other hand, those colonies which still had some old honey in the food chambers carried over from last year are stronger than usual. This great colony strength is probably explained by the fact that the workers having but little opportunity for flight did not wear themselves out and die of old age in May. For this locality a cold wet May as a rule results in extra strong colonies provided the bees are supplied with ample stores. During a spring like the one just past, the shallow extracting super is scarcely large enough for a food chamber unless the brood-chamber is also supplied with stores when the colony goes into winter quarters.

Most of the colonies still having sealed honey left that was carried over from last season were colonies having old queens. This, of course, is to be expected because the colonies having young queens reared more brood both last fall and during the spring.

Some colonies were found apparently without a drop of honey in the hive and on the verge of starvation just as the clover began yielding on June 9, which was exactly ten days after the first white-clover blossoms were reported for the locality. In striking contrast to this, those colonies still having some old stores left and especially those having young queens had partly refilled their food chamber in spite of the bad weather.

The Editor has often stated at beekeepers' meetings that the food chamber is usually refilled free of charge after being filled the first time because of the better condition of the colony in the spring which permits it to gain in stores while other colonies are starving, but he will say this with some reservations now, for the bees have failed to refill the food chambers previous to the main honey flow both this spring and last, thus making the third season they were not refilled previous to the clover-honey flow since 1911, when the food-chamber system was first put into use in these apiaries.

However, if the food chambers had been a little larger or possibly a little better filled last summer, they would have been refilled free of charge again this season, for in every case where there was considerable old honey left the food chambers were completely filled during the first few days that the bees worked on the clover. In other words, these colonies refilled their food chamber long before colonies not supplied with a food chamber were in condition to store any surplus whatever. For a spring of this kind the full-depth standard hive body is not too large for a food chamber. Many colonies having such a food chamber supplied with about 50 pounds of honey came through to the clover-honey flow with an enormous working force and brood in 12 to 15 frames. Such colonies can quickly replace the honey they have used from the food chamber before ordinary colonies are able to get anything ahead.

AN exceedingly important but not well understood factor in securing large yields per colony is the matter of proper distribution of the bees within the hive. When the hive workers, through some fault in the beekeeper's management, are not distributed to the remote parts of the hive but crowd into the brood-nest the result is a stagnation of work which often leads to swarming. Conversely, when the hive workers expand into the remote parts of the hive and into the supers leaving only enough bees in the brood-nest (not brood-chamber) to do the necessary work there, the result is more vigorous work by the field bees, strange as this may seem, and less tendency to swarm. The beekeeper who by

Inducing Bees to Work With Greater Spirit.

skillful management induces his bees to expand their work into the supers, or at least induces the hive workers to occupy the greatest possible number of combs and continue this expansion to keep pace with the rapidly increasing numbers of bees in the spring is the one who secures the largest yield and has the least trouble from swarming.

A striking illustration of the conditions under which the hive workers are willing to expand throughout a three or four story hive was recently observed in the Editor's apiaries, which are operated at long range. At the beginning of the clover-honey flow on June 9 many strong colonies were completely occupying four stories of standard-depth hive bodies. There was brood in two stories and two stories of empty combs. The four-story hives were apparently crowded with bees from floor to cover; and within two days after the beginning of the honey flow thin nectar was deposited in practically every vacant cell from the lower corners of the lower frames to the top-bars of the frames in the fourth story. Since these colonies are worked for comb honey, the hives were reduced to a single story, the oldest brood being placed in the one story left and the other stories taken away when comb-honey supers were given. Owing to the apparent enormous strength of some of these colonies it did not seem possible that all these bees could crowd into a single brood-chamber and two comb-honey supers, so some of them were given three comb-honey supers. A few hours later these three and and four story colonies were occupying only the brood-chamber and the rows of bait combs in the comb-honey supers, the other parts of the comb-honey supers being vacant.

One can imagine the condition within the brood-chamber of the crowding of all these young bees back into an already crowded portion of the hive and the effect this will have upon the tendency to swarm. Also since the bees had already put about as much thin nectar in every available cell throughout the four stories as they are willing to do, one wonders what they did with the incoming nectar during the rest of the day and until the foundation was drawn in the sections. They did deposit thin nectar in the bait combs but apparently with some reluctance. They greatly prefer at that season old black combs, and when these were taken away, and the new white combs in the sections were given, the bees did not take kindly to them. Another strange thing noticed was that they deposited nectar in the bait combs that had not been cut down before they did in those that had had the walls of the cells cut down to about one-fourth inch in depth. Thus the foundation was least attractive to the young hive workers, the cut-down bait combs stood next and the uncut bait combs next. The kind of combs that attract the bees to the supers in greatest numbers are the old dark brood-combs.

Reducing these colonies to a single story and giving comb-honey supers under these conditions, therefore, resulted in driving most of the young bees back into the brood-chamber to be added to the thousands of emerging bees there, thus bringing about a congestion which unless relieved immediately must surely result in swarming. Furthermore, the crowding of these young bees back into the brood-chamber immediately results in fewer bees going to the field, thus adding these idle field bees to the already congested brood-chamber, which not only further increases the tendency to swarm but also reduces the field work. Furthermore, since the bees do not fill cells full of thin nectar but spread it out into many cells to facilitate evaporation, there was no place for the field workers to deposit further loads of thin nectar, so why should they carry more into the hive until the next day after much of the thin nectar has been partially ripened and concentrated into fewer cells? Under these conditions not only many of the hive workers, but possibly also many of the field workers, must function as tanks or receptacles for the thin nectar to hold it until there is room to deposit it in vacant cells.

Of course, as soon as comb building begins in earnest the young bees will again be attracted to the supers and the congestion in the brood-chamber will be relieved to a large extent. The manipulation described above was performed at the very beginning of the honey flow before the bees had begun to secrete wax for comb building. This is a critical period so far as the proper distribution of bees is concerned in comb-honey production. The extracted-honey producer is usually able to tide the colony over this period by giving a super of old black combs several weeks before the beginning of the honey flow, then giving additional supers adjacent to the brood-chamber as fast as the young bees can be induced to occupy them, regardless of whether the combs are being filled with honey or not. In other words, the first supering is largely for the purpose of spreading the young bees over the largest possible number of combs, while later in the honey flow supers are given primarily to afford more room for the ripening and storage of honey.

EGG-LAYING RATE OF THE QUEEN BEE

By W. J. Nolan

Apicultural Assistant Bureau of Entomology, United States Department of Agriculture

Counting the Cells of Brood Instead of Guessing as to the Number

[It has often been stated that a queen bee is capable of laying enough eggs in 24 hours to equal more than her own weight. Of course, the weight of a queen varies, depending upon whether she is heavy with eggs, but ordinarily she weighs about .25 of a gram; and one of her eggs when first laid weighs about .00013 of a gram. It would require nearly 2000 eggs to equal the weight of the queen. The number of eggs a queen can lay in one day is not of as much practical importance as the number she lays in three weeks, the time required from the laying of the egg to the emergence of the young bee. In this article Mr. Nolan gives the results of actual counts, thus revealing what queens actually do as to egg-laying. The figures will be a surprise to many.—Editor.]

Increase of the population of a colony is a subject which has been under discussion since the days of the ancients. Before the time of Swammerdam views as to the way in which increase of population is made differed widely from those held at present. It was Swammerdam who, by his noteworthy researches in the latter half of the seventeenth century, settled for once and for all the sex of the queen and her proper function. Since this great apicultural discovery, which established the role played by the queen in the increase of colony population, beekeeping literature has been filled with reports and conjectures as to the queen's daily egg-laying capacity and the total amount of brood-rearing during a season.

In 1740, in the first half of the eighteenth century, the celebrated Reaumur stated that the height of egg-laying comes in the spring, and that over a two-month period at this time the queen may average 200 eggs per day. This average was accepted during the remainder of the century as fairly typical of a queen's egg-laying capacity. For instance, Keys in 1780 states of the queen-bee: "About the middle of the spring is the height of her laying; from many circumstances it is very probable that she then lays about two hundred eggs a day." In fact, as late as 1838, Bevan gives identical data, although he credits Huber with the origin of the figures.

The first noteworthy attempt to estimate the number of eggs laid by a queen bee throughout an entire season was made in England by Desborough. His method was to estimate the length and width of the surface covered by brood on each frame, and then to reduce these measurements to the number of cells represented. Making such measurements for a colony once a month in 1851, he found on one occasion 12,960 cells of brood, which represented a daily egg-laying rate for this queen of 617. This was the season's maximum. From 1852 to 1857, inclusive, he made measurements every 21 days of the amount of brood produced by the same queen throughout the six seasons. This queen commenced laying in July, 1852, and disappeared in November, 1857. Her maximum daily rate was estimated at 496.

First Record of Actual Count of Eggs.

In 1860 von Berlepsch published the first trustworthy account of an actual determination of the number of eggs laid by a queen in a single day. This noted German investigator had succeeded in 1856 in confining the egg-laying activity of an especially prolific queen to a single comb during 24 hours. A count then showed 3021 eggs. Furthermore, an estimate made at the same time of the remainder of the brood contained in the hive to which this particular queen belonged led to the conclusion that she had been averaging almost 3000 eggs daily for the previous twenty days. This daily average has since become classic, having been adopted widely as a proper index of a queen's daily egg-laying capacity. Inasmuch as the queen in question was active during five seasons, von Berlepsch assumed that she had laid at least 1,300,000 eggs during her lifetime. Cheshire may have used this assumption as the basis of his estimate of 1,500,000 eggs as the total possible achievement of a queen, since he does not give the data from which he arrived at his figures. Von Berlepsch, however, in reference to this outstanding queen, states that such an enormous egg-laying rate is highly exceptional; that even in the largest hive during the best of seasons a queen will not average more than about 1200 eggs daily, because there is a wide difference between that of which an especially prolific queen is capable, under extremely favorable conditions, and that which an especially prolific queen really does as a general rule.

Baldridge, a contemporary of von Berlepsch, deserves mention in connection with brood-rearing investigations because he furnished the first published census of brood in a modern hive. This American, not satisfied with the varying estimates then current as to a queen's egg-laying capacity, proceeded on one occasion in 1859 to count all the eggs, larvae and sealed brood in a certain

hive. Although Baldridge had planned to continue his investigations, perhaps the arduousness of this lone attempt deterred him, because he published nothing further. It is interesting to note that in his locality, Niagara County, New York, on about the first day of August, he found 3643 eggs, meaning a daily rate of slightly over 1210. On the other hand, his total sealed and unsealed brood amounted to only 15,438, or a daily egg-laying rate of approximately 735. This would indicate that the queen was being stimulated just at the time of the count.

For the next forty years, of the many reports on the number of eggs laid daily, few give any index as to what should be expected of the average queen bee because these reports too frequently represent some performance beyond the ordinary over an extremely limited time. The acceptance of such extraordinary daily egg-laying rates as a common occurrence, it seems, became quite widespread in beekeeping literature of those days without there having been made first a critical examination of the method by which these rates had been obtained. They served as the basis, nevertheless, for many conjectures on the amount of brood reared in an average colony during a season. The cumulative effect from repetition of this type of data so influenced beekeepers that, in contrast with ideas held in the first half of the nineteenth century, in the latter half of the same century ideas as to egg-laying performances of queen bees swung to the other extreme. Thus in 1894 Charles Dadant could write that beekeepers were nearly in accord on the fact that certain queens could lay 4000 to 5000 eggs in twenty-four hours. A year later Doolittle, in a serious discussion of the egg-laying capacity of queens, held forth the possibility of a daily egg-laying rate of 6000, although he stated later in the same article that from his experience he thought 2400 eggs per day a good maximum average for any queen bee.

Sporadic reports on egg-laying, however, either in themselves or in relation to other similar reports from localities under far different conditions, afford little basis for drawing general conclusions either as to the total amount of brood reared during the season or as to daily egg-laying rates of queen bees in general. Such conclusions can only be made validly from data secured by some exact method of brood measurement which brings out the natural seasonal variations in brood-rearing activity. Although during this long stretch of years it may have been realized that the total amount of brood reared during the year can be determined only by making continuous observations of the amount of brood in the same colonies throughout an entire season, apparently no one undertook the task. For the most part, speculative thought during this period too often overlooked the fact that for the beekeeper a theoretical, possible daily egg-laying rate is only a matter of curiosity, but that the number of eggs laid daily which actually develop into adult bees, together with the conditions under which they are laid, is of most vital concern to him if he wishes to insure a honey crop and the prosperity of his colonies.

Finally, in 1895, Baldensperger made public the results of successive observations on the amount of brood reared under normal conditions by a normal colony throughout an active season. This seems to have been the first instance of data of this kind being published for a normal colony because, quite evidently, the two colonies used years earlier by Desborough were below normal strength. Baldensperger's estimates were made at intervals of from two to five weeks, and included those for a colony in Palestine during the season of 1891, as well as those for a colony in southeastern France during the season of 1895. Adding particular value to his record is the fact that Baldensperger includes the dates of the various honey flows occurring during the same year. Although the estimates given are not to be taken as absolutely accurate, they do furnish a fairly reliable index as to what in general takes place throughout a season. The maximum average daily egg-laying rate found for any 21-day period in 1891 was 2600; in 1895 it was 2400. Baldensperger found a direct relationship between egg-laying and nectar flows.

Records of Present-Century Workers.

The year 1901 marks an epoch in this line of research because at that time Dufour published the results of actual counts of brood made at intervals of approximately 21 days during the active seasons from 1897 to 1900 inclusive, a period of four years. During each of the first three years he used two colonies, and in the last year only one colony. The magnitude of this work may be realized when it is borne in mind that each egg, larva and sealed cell was actually counted. The highest average daily egg-laying rate for any twenty-one day period as ascertained by Dufour was 1627; the next best was 1557. He also found that making an artificial swarm decreased the egg-laying rate, that a young queen laid vigorously, and that a lower temperature even in June restricted the queen.

In 1912 curves representing the daily egg-laying rate of three queens in 1911 were given by Brunnich. Being the first published curves based on results from

brood-rearing investigations, they are of special interest. Brunnich's work, unlike Dufour's, is based, not on an actual count of each cell containing brood, but on a mathematical calculation of the number of such cells derived from linear measurements of the brood area on each frame throughout the season. From data thus obtained, daily egg-laying rates are derived for the whole season. Although the claim can not be made that Brunnich's work is as nearly accurate as Dufour's, yet the Swiss investigator has adopted a method which is fairly speedy, readily utilized, and which gives results reliable enough for most purposes.

In 1919 he published somewhat more in detail another curve showing the daily egg-laying rate of an individual queen in 1918, together with a curve for the honey flow of the same year. The exact dates of all the measurements, however, or even the lengths of the intervening intervals, do not appear in these two articles. In 1922 Brunnich published an egg-laying curve for a queen in 1919. For this curve the dates of the brood measurements are given. Twelve in number, they represent intervals from a minimum of 4 days to a maximum of 23 days. Seven comprise intervals of 15 days or more, but only one exceeds 17 days.

Other graphs, on a considerably smaller scale, showed the daily egg-laying rates for three queens in 1912, three queens in 1913, and the queen in 1918 already mentioned. He also included a table giving the total number of eggs laid monthly throughout an active season for sixteen colonies as determined by one of his sons. In 1923 he again presented the same data in part. Including his son's data, a total of twenty-seven individual, seasonal brood-rearing records scattered over seven seasons is represented in the work by Brunnich on the occasions just cited. In no instance, however, was the average daily egg-laying rate for any 21-day period found to exceed 2000. In fact, this rate was below 1500 for more than one-half of the colonies. Brunnich himself went so far as to state in 1922 that he did not believe he ever had possessed a colony which exceeded a daily egg-laying rate of 2000.

Problem Taken Up by the Bureau of Entomology.

There having been so few outstanding attempts to throw light on this subject prior to 1920, work in this field was begun at the Bee Culture Laboratory in that year. For this purpose five colonies were used in 1920, sixteen colonies in 1921, thirty-two colonies in 1922, eight colonies in 1923, and one colony in 1924. In 1920 actual counts of all brood, both sealed and unsealed, were made weekly by L. R. Watson, at that time Apicultural Assistant. In 1921, when the author took charge of the work, a photographic method was adopted whereby weekly photographs are taken of every frame containing sealed brood. Counts of all the sealed brood can then be made readily from the negatives thus obtained, only sealed brood being counted because of its greater clearness in the negative. From such counts, the maximum daily egg-laying average over any 12-day period has been calculated for all of the colonies used, 12 days being the average time during which worker-brood remains sealed. Each colony was kept under conditions which offered the queen little chance of being restricted in egg-laying.

The maximum average daily egg-laying rate over a 12-day period found in the author's work so far is 1808, and represents the performance in 1923 of a queen mated in 1922. For 26 days within the same period this queen maintained a daily average of not less than 1640 eggs. In 1922 the highest average daily rate found for a 12-day period was 1587. The queen dated from late summer of 1920. In 1921 the highest daily average for the same period was 1513 and the next highest was 1488. Both of these queens dated from the summer before. Of the other fourteen colonies used in that year, this average for the next five colonies ranged from 1400 down to 1250, for the next six between 1250 and 1000, while for the remaining three it was below 1000. It is interesting to note that the queens in the last three colonies dated from 1919, while the others were from 1920.

The highest average daily rate over any 21-day period, as ascertained from the counts made by Watson in 1920, is 1528. The maximum daily averages for the same period in the other four colonies used in that year are 1468, 1223, 1201 and 1008, respectively. These queens dated from the year before. In the investigations on this subject carried on at the Bee Culture Laboratory since 1920, in no instance has a daily egg-laying rate been found which approaches anywhere near the daily rate of 3021, found by von Berlepsch in his experiment.

In 1923 a later American worker in the field, J. H. Merrill, of Kansas, published some egg-laying data for six colonies. His findings were based on three different observations made in 1922 to determine the amount of brood in each of the colonies. The dates of these observations were June 15, July 15 and September 27, the three weeks prior to June 15 coming just before the honey flow in that locality. From his three determinations of the amount of brood in each colony Merrill found that the maximum average daily egg-laying rates of all six only ranged between 857 and

1321 for any 21-day period. Thus his findings coincide with those of other workers in this field since Baldensperger.

Of course it is recognized that the averages over the 21-day periods as represented by the work of Baldensperger, Dufour, Brunnich, Watson and Merrill, or over the 12-day periods as in the work of the author, may often have been exceeded on particular days within that average period. The data presented by these workers, however, show conspicuously that after the maximum egg-laying rate over any extended time during the season has been attained, a more or less gradual decline in this rate sets in and terminates finally in the cessation of brood-rearing for the season. On the other hand, from the beginning of brood-rearing for the season until the maximum egg-laying rate for any extended time is reached this rate increases. In regions of early honey flows the rate of increase until the maximum is reached is often remarkable. These facts, in themselves, show that any performance of a queen bee for a single day means little in understanding brood-rearing activity throughout the year because such a day's performance gives no hint either of daily fluctuations in the egg-laying rate or of natural, seasonal variations in brood-rearing activity. Hence, to repeat what has already been said in other words, an appreciation of seasonal brood-rearing activity can be obtained only by continuous observations throughout the year.

To summarize historically the trend of apicultural thought as to the egg-laying ability of the queen, the beginning of the eighteenth century saw common credence given to daily egg-laying averages of 200. With more observations, and probably because of improved hive construction, the possibilities of the queen became better appreciated and, perhaps, were often overestimated. At any rate, towards the end of the century, hive construction, articles in apicultural journals, and other beekeeping activity frequently centered around daily egg-laying averages of 5000 without any one having actually ascertained that such a rate is ever continued for a whole week, to say nothing of any one having ever found such rates during a whole season. It should be borne in mind that such ideas proved beneficial, in so far as they led to more room being given the colony, thus providing more cells in which to store food against a time of need, especially winter and spring.

Baldensperger ushered in an era of a more vigorous and scientific attack on this problem when he published data on seasonal egg-laying activity obtained by making continuous observations throughout an entire season, rather than by a mere calculation from some exceptional rate found within that season. With more refined methods of observing the queen's egg-laying activity, even the maximum daily rate determined by Baldensperger has not as yet been duplicated in the results obtained by later workers in this field. Coincidentally with the accumulation of scientific data, apicultural thought in regard to the egg-laying activities of the queen bee is tending to take approximately the same position occupied by von Berlepsch over half a century ago, when he set forth the idea that a daily egg-laying rate of 3021 continued for a time is a rarity. This later tendency is brought out quite strikingly in the opinion expressed in 1924 by Demuth when he penned words to the effect that a daily egg-laying rate of 3333 is only occasionally, if ever, maintained for 21 days. From the scientific data available up to the present time it would even seem that a daily egg-laying rate of 2000 continued for any length of time may be taken to represent the performance of a queen bee beyond the average. In any event, the average daily egg-laying rate under natural conditions for an entire season is much below the maximum daily egg-laying rate within that season.

Washington, D. C.

LEARNING AND UNLEARNING

By Leslie Burr

Handling Honey from the Hive to the Extracting Room in the Most Efficient Manner

Conveying honey from the bee hive to the honey-house seems like a very simple matter, yet as I remember back over the apiaries I have visted I can recall but few where the system used could not be improved.

When I first visited California in 1906, I found the apiary of one large producer in the southern part of the state, who used specially constructed boxes, fitted with a honey-tight bottom and hinged cover. Each box held about ten frames of honey, and that constituted a load. When I suggested that such loads were small, I was met with the reply that the wheelbarrows in use would have to be rebuilt if more than one of those comb boxes were used, and that he did

not consider it worth while to do that. He then added that he thought one box of combs made a big enough load anyway. This apiary contained about 400 colonies, and the hives were placed about 15 feet apart each way. The previous year, 1905, when there occurred one of the heaviest sage-honey flows in the history of California beekeeping, this big yard, I was informed, had been worked the way I have described. But, bad as this method was, from an efficiency standpoint, I think that it was considerably better than the system described in Gleanings and later in the A B C by Alexander of New York State, who, as I remember it, did not use even a wheelbarrow but carried the combs to the honey-house by hand and then poked them inside the building through a trick door arrangement. [This was a makeshift arrangement used in the Alexander apiary before the modern honey-house now used was built.—Editor.]

Fig. 1.—Wheelbarrow built to hold four supers loaded with empty combs, ready to start taking off honey.

Various Conveyances for Honey.

Personally, I think I have been through all the stages of conveying honey from the hive. As a boy I carried combs in my hands, then later I used the metal box with a cover and bail; then I carried the combs in a super, and eventually graduated to the wheelbarrow. The hand methods are all right and proper for the back-lot beekeeper. But when beekeeping becomes a business, business methods should be employed. In order to describe best what I consider the best method of handling honey, from the hive to the extracting-house I have taken a series of pictures, illustrating the course of events in loading a wheelbarrow properly.

The wheelbarrow illustrated was built for apiary work. Where a barrow of the "Daisy" type is at hand it can be easily made to serve as well as the one illustrated by using two flat covers for underneath the supers and constructing uprights to hold the upper supers from sliding forward.

Perhaps some of the readers of this will ask, "How about the two-wheeled cart, or the car that runs on a track?" Well, I have had experience with a two-wheeled cart, and the objections to the cart are: (1) It takes just about twice as much man power to handle four supers on the regulation cart as with a wheelbarrow; (2) the cart cannot be placed in the exact position desired as readily as a wheelbarrow; and (3) a cart is not as convenient. The bed is higher, the wheels are in the way of the operator, and supers cannot be piled or stacked on it as easily as on the barrow.

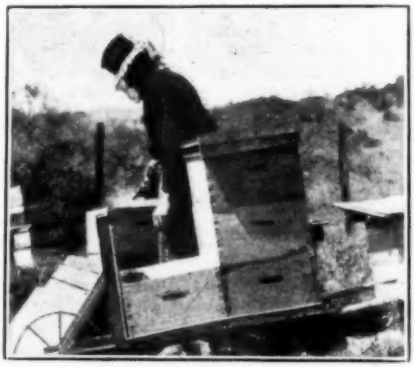


Fig. 2.—The lower front super is filled first. To do this the upper front super is placed on the rear. The combs of honey are placed in the forward side of the super, the empty combs being crowded to the rear to allow this.

As to the track and car: I never personally tried out such an arrangement, but I have seen them. My objections to the apiary track and car, such as I have seen, are: (1) The expense of such an arrangement; (2) the track forms a pest place for grass and weeds; (3) the trouble of making the entrance of such an arrangement into the honey-house bee-tight; (4) if the track does not enter the honey-house it means carrying the supers of honey in by hand, which is extra work; (5) that it is impossible always to have the empty super in the exact position most convenient for the operator, when removing the honey from the hive; (6) the track makes rigid the form and size of the apiary, and the location of the hives; and (7) the track and car arrangement is not adaptable for other than level land. To use it, in most cases, makes impossible the utilization of a side hill.

The Lowly Wheelbarrow.

A final word to such as may consider a wheelbarrow a plebeian vehicle, lacking in dignity and unworthy of a place in a modern apiary. Please remember Ben Franklin, whom some historians claim to have been the most widely known man of his time, and who was one of the greatest intellects of his own time, and of all the ages. He was a scientist, inventor, philosopher, economist, statesman and the greatest practical business man of his day. He perhaps more than any other one man is responsible for the form of government under which we live. He founded the government mail system that delivers this copy of Gleanings to its readers. He invented the stove that heats the houses in which we live. He gave us the idea of public libraries, and founded the first one. In his autobiography he tells us how he used to trundle a wheelbarrow loaded with paper for his printing shop along the streets of Philadelphia, and proudly tells us that he found it good business to do so.

Fig. 3.—The second super filled is the upper front super which has been replaced after filling the lower one. Always place the combs of honey on the forward side. Empty combs are shoved back to allow this as before.

Removing Bees from the Combs.

Then there is the little matter of removing bees from the frames of honey. In this almost every beekeeper develops more or less of an individual technic.

In a previous article I mentioned the fact that Glen E. Moe of Cuba had specially constructed frames that would stand being jarred by dropping them on the rabbets of the super.

This method worked well with Moe, because his frames were built to stand such treatment, and his hives and frames were kept free from burr combs.

The broad-bladed putty-knife, or scraping-knife, was used as a hive tool, and all burr combs were removed from the top of the frames, super or brood-nest, before breaking loose the frames. And when uncapping, every burr comb, no matter where it might be located, was removed. To this end, the lower edge of the uncapping-knife was left dull, and the men uncapping were taught to cut upwards to cut honey, and to chop downwards to cut off the burr combs. The reason for the lower edge being dull was to prevent cutting the wood of the frame.

Fig. 4.—The third super to be filled is the rear lower. To do this the rear upper super is placed on front. Note that the uprights on the wheelbarrow are high enough to hold this super from slipping off when wheelbarrow is in motion.

In the matter of removing burr combs, I recall an amusing experience. I was once uncapping honey for one of the largest honey producers of Colorado and he remonstrated with me about cutting off the burr combs. He said they had been on the frames for years and he wanted them left on. I told him by way

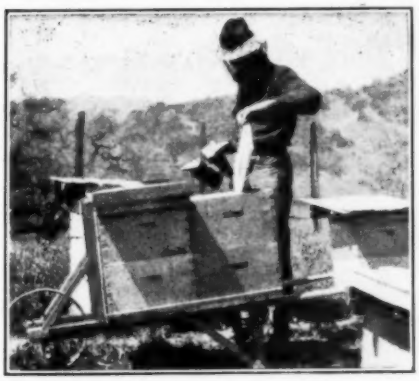


Fig. 5.—The fourth super is placed on the filled lower one. This shows the last comb of honey being placed in this super, thus completing the load. Sometimes a fifth super of honey is added in order to finish the last hive worked.

of reply that removing burr combs was one of my bad habits, and that I was unable to break the habit; and, to make matters worse, I insisted on having all the other help, when uncapping, remove burr combs from the frames, and they all acquired my bad habit. As a result, there were several days during which my employer did not speak to me, except when absolutely necessary. In the end, before the season was over, he, too, had acquired my bad habit and was cutting off the burr combs with the rest of us, as he found that frames free from burr combs meant easier hive work, fewer stings, considerable wax and an improvement in the appearance of the interior of the bee hives.

But to return to the subject of removing bees from combs. Hochstein, that interesting personality, when I visited him in western Cuba, I found jolting off the bees in a manner similar to that used by Moe. But as he had standard frames that would not stand being dropped on the rabbets, he used his fingers as a cushion between the ends of the top-bar and the top of the super, and, as he explained, he had toughened up his fingers so that it caused him no personal inconvenience to so jolt the frames.

Then there have been a number of beekeepers I have known who have followed the practice of jarring a comb of honey by striking the lower ends of the frame upon the edges of the super—first one end of the frame and then the other, and I consider it good practice.

Shaking Off All the Bees.

But there is one man I have met who had little need of making use of any of the methods I have just described in ridding a comb of honey of bees. That man is Harry Beaver. I don't know how he works in Pennsylvania today, but years ago when he was in Cuba managing Coggshall's bees, he just "shook 'em off" the combs. With Beaver it was a combination of great physical strength and a quivering shake that he had developed. When he took hold of a frame and shook it, the bees became dumfounded and tumbled off the comb, and that was all there was to it. All beekeepers today use this method of shaking frames, at least all producers of extracted honey that I have observed, but they have to finish the job with a brush. But with Beaver, when he shook, there were no bees left to brush off.

Willits, Calif.

SOME PACIFIC COAST BEEKEEPERS

By Dora Stuart

A Stalwart Among California Beekeepers who Freely Devotes Time and Energy to the Betterment of Beekeeping

"We are but vehicles in which our ancestors ride."

From the point of view of that old adage it would be impossible to study the career of Willis Lynch as a beekeeper without first considering his immediate forebear, a lovable old Missourian who was a pioneer settler on the north bank of Honey Creek, where in 1861 Willis Lynch was born into his inheritance of bee lore and seafaring. For back of his father were ancestors who manned ships, piloting great cargoes to and from remote corners of the world.

Father Lynch himself, although not a rover of the seas as were his father and uncle, possessed a great curiosity concerning his own country that had to be satisfied before settling down to the business of married life and the responsibility of rearing a family. He first tried to enlist in the Mexican war, but was rejected four times. He finally went as a teamster and served in that capacity until the close of hostilities. In 1850 he joined an emigrant train for California.

An Incident in Gold Mining.

Here he mined in many sections of the state, getting vastly more experience out of the adventure than gold out of the ground. One incident in his mining career illustrates the uncertainties of that romantic occupation, and its bearing on the future.

A group of miners had taken up a claim in northern California, and each man allotted a piece of land 16 feet square. Father Lynch with three others shoveled away faithfully for several days, and none in their entire company could remove more dirt than these four powerfully built men of whom only one could outwork Father Lynch. At last they came to a great rock that barred further progress. They knew they were in a rich field and kept on trying to dig around the obstacle and strike the main artery of treasure; but finally gave it up and started to dig in a new location.

Later, two young men from New York, typical tenderfeet, came into camp. They said they wanted to dig for gold and asked if there would be any objection to digging on that claim. Father Lynch hospitably directed the newcomers to the hole just abandoned, and the young men, elated to find so much hard work

already accomplished, set to shoveling with enthusiasm, much to the amusement of the more sophisticated miners. In less than two hours the New Yorkers returned to camp with thousands of dollars in gold, too excited to remain even for supper. They had made their stake, and returned immediately to New York, rich for life.

But what has gold mining to do with beekeeping?

Everything and possibly nothing at all. Suppose Father Lynch had dug a little deeper in that hole and had uncovered the pocket found by the New Yorkers. Encouraged by that good fortune, suppose he had used his share of the treasure to develop other mining claims, or to purchase land, cattle, one of those early stage lines, a gold-mine by itself, corner timber regions, in short, suppose he had become too engrossed in conquering the West ever to have thought about going back to the north bank of Honey Creek in Missouri.

In that event, Willis Lynch, with his predilection for beekeeping and for travel, might never have been born, and the Pacific Coast would have been deprived of one of its most potently constructive forces in the development of commercial beekeeping.

During Father Lynch's mining days beekeeping was unknown in California, although in Mexico was to be found the Spanish bee not unlike our German black bee of today; but they had not been domesticated and were not known in California. However, in his wanderings up and down the state he saw the two surviving colonies from the first bees shipped into California by Harbison, California's first commercial beekeeper, and whose interesting book on California beekeeping published in the sixties, is considered a valuable addition to bee libraries whenever one of the exceedingly rare copies may be found. If Father Lynch ever met Mr. Harbison personally, he failed to "pass on" the incident to his son Willis, along with other bee lore that enriched the boy's life.

Early Day Beekeeping in Missouri.

Father Lynch had no scientific knowledge of bees from a study of text books on the subject. But he did know from observation that bees transferred from a tree to a box, in which delicate operation he was an adept, would be more likely to remain in their new home if supplied with a generous portion of their own comb to which they were accustomed; and so he always tied sections of comb to the cross-sticks in the "gum" or in the box, whichever it happened to be. Needless to say that it was more often a gum, that is, a hollow section of log standing on end with the old knot-hole entrance on its side. A cover was devised to protect the bees from the elements.

Often a box was fitted over the gum; and when filled with honey would be removed and the honey taken out without disturbing the brood-nest in the gum below. This box was called a "cap" and undoubtedly was the forerunner of the super as we know it in modern apiary equipment. When no box or cap was used, the honey was removed from the top of the gum itself by scooping it out, wax and all, and straining it. It was thus that the term "strained honey," still so often confused with "extracted honey" by those unfamiliar with the process of honey production, originated. Even this latter method of securing the honey was accomplished without sulphuring the bees.

It became a favorite pastime of father and son to secure swarms of bees from hollow trees and domesticate them,

Willis Lynch inspecting his father's apiary a few days after his father's death.

and soon the gums in Father Lynch's apiary numbered 30 colonies. The gums were mostly oak, not necessarily because the bees preferred the hollows of oak trees, or because oak trees were more subject to decay, but because there was such a preponderance of oak growth on his land.

An Early Movable-comb Hive.

In one specially-made box Father Lynch had tied combs to the cross-sticks in such a way that a stick could be lifted out, comb and all, for observation purposes. The box was made for his son Willis, then just a little boy between the age of six and seven, who made daily, or, rather, almost hourly pilgrimages to his bee box, lifting out the sticks himself, until he became familiar with the most intimate details of the family life of the colony.

All this was without thought of commercial advantage on the part of Father Lynch, or the faintest inkling that he might be infringing upon the future in-

vention of the movable-frame hive. He kept bees for the joy of it and for the honey to use on his own table. In just the same spirit he cleared and tilled his land, selling his finest walnut timber that would now be almost priceless, at the going rate of $8.00 a thousand.

This non-commercial trait was also inherited by Willis Lynch, who, in 1882, left the family roof on the north bank of Honey Creek and the bee-gum apiary, to follow his father's footsteps west. Having known California vicariously throughout childhood as the heaven for all good Americans, it was quite natural and altogether human to try to secure a section of that heaven on earth by establishing himself there. Just to what extent he has succeeded is not recorded, although he would probably admit that heaven has its ups and downs. At any rate, he has lived and kept bees continuously in California ever since, with the exception of seven years, 1902-1909, spent in the Philippine Islands, where he also kept bees and where he acquired the title of "Judge." But that is another story.

California has the greater claim to Willis Lynch as a beekeeper. His contribution to the industry will always be recognized as the raising of beekeeping standards in every department of the craft, whether in private life or in his numerous official capacities, both state and county. These departments include marketing, grading, the buying and selling of bees, inspection, and last, but not the least important, in the knowledge of the insects themselves. One might go further and say that he established standards so high that it will require several years, perhaps decades, before California as a whole can reach the level of his projected ideals.

Holds Office of Bee Inspector Without Pay.

Particularly is this true of his work as bee inspector for Stanislaus County, where he served for twelve consecutive years in that capacity. He was chosen for that position under a system which permits the beekeepers in each county to choose the directors of their affairs—in the main a democratic method—but one that does not guarantee uniformly efficient inspection, or the protection of one county with high standards against another county with lower standards of efficiency, or possibly a county with no standards at all as evidenced by the absence of any pretense to inspection whatsoever.

Whatever are the advantages or the disadvantages of California's county system of inspection, the appointment of Willis Lynch, and his retention of office for twelve years, reflects the intelligence of Stanislaus County beekeepers. A brief study of his methods there can not be amiss just at this time when the desirability of a state head in apiculture is being brought to the attention of California beekeepers.

Mr. Lynch began his work in Stanislaus County with but few handicaps in the way of precedent. As he served without compensation he was not harassed by belligerent taxpayers who wanted to know, and rightly, too, how their money was being spent.

But the fact that he received no money for his services tended in no wise to lessen his vigilance. On the contrary, if it made any difference at all, it deepened his sense of obligation to the beekeepers and his responsibility as an officer of the law. For that is what he considered himself to be, sworn to uphold the state laws, many of which he helped to frame, and the ordinances of

The little apiary back in Missouri brought back memories of his boyhood days to Willis Lynch when he visited the old homestead in 1918.

Stanislaus County. More than that, each deputy upon appointment was required to take the oath of office also. The county was divided into districts, each deputy being responsible for the condition of the bees in the particular district to which he was assigned.

The compensation of the deputies was the same as that of their chief, and had the same effect on the quality of their work. In fact, it was they who did practically all of the actual work of inspection. No native Missourian could offer any strenuous objections to that arrangement, least of all Willis Lynch, whose time was pretty well taken up in the Stockton public schools. His attitude toward work in general is the sane and comfortable one of doing tomorrow whatever can not possibly be wedged into today's 24 hours, and that

attitude applies to social engagements as well.

To illustrate, if you invite Mr. Lynch to visit you, he may come a week after the event is scheduled, or not at all; but if you ask him on his word of honor as a gentleman to be present at a certain time, nothing short of his arrest for speeding or actual kidnapping will prevent his appearance. Which admirable trait is of the South, and explains his fidelity in the discharge of official duties as he conceives them to be.

His service to Stanislaus was in acting as its head in the Bee Department, its court of last appeal. He was available at all times to diagnose a case of foul brood, to settle a dispute or to act as arbitrator in difficult situations. Like Dr. Sayler, Inspector of Glenn County, he stressed the educational aspect of inspection rather than the police work, and his pupils in the Stockton schools were familiar with the honey bee from actual observation and from the frequent handling of colonies on the campus.

To show that his leaning toward educational lines did not weaken his stand on official matters, two bee men of the get-rich-quick variety were made to realize a peculiarity in Mr. Lynch to regard seriously his oath of office. They asked permission to move a large number of diseased colonies across Stanislaus County to a pasture that promised a harvest sufficient to pay for the bees, which were to be had for a song, and to make a handsome profit besides.

Mr. Lynch referred them to the section in the state law making it a misdemeanor to move diseased bees any time or anywhere, and, though smiling regretfully, the bees were not moved. Mr. Lynch has lately resigned as inspector and given up school work to devote all of his time to honey production, the greater number of his colonies now being located in Tehama County, northern California.

The Bees Back on the Old Homestead.

Meanwhile the bee gums on the north bank of Honey Creek back in Missouri had gradually given place to modern equipment. But neighbor beekeepers had not proved to be so progressive, as Willis Lynch discovered when he visited his boyhood home in 1918. One of his own cousins was still operating a bee-gum apiary within a half mile of the old homestead.

It was on that visit that Father Lynch, at the age of ninety-three years and eight months, bade a long farewell to the bees after having tended them since 1839 with but one break, to serve his country in Mexico and to seek adventure in California. Some faithful friend familiar with Father Lynch's hobbies must have "told the bees" of his passing, for they did not dwindle nor desert their hives. Upon examination by his son, Willis Lynch, the California apiculturist, they were found to be in excellent condition, strong and free from disease, and that under no other than his aged father's supervision.

Chico, Calif.

THE INTRODUCTION OF QUEEN-CELLS

By Jay Smith

An Important Discovery by which Loss of Queen-cells by Being Torn Down is Prevented

At a certain beekeepers' convention I was asked to choose my subject and I chose the above. One of the members asked me if there was enough to be said on that subject to take up a period of 40 minutes. I could not help smiling, for his question reflected what was in the minds of many of us a short time ago. Two years ago I made a careful study of the subject, and I never realized there was so much to it and the many perplexing problems involved. Volumes could be written on the subject, and yet "The half had not been told." I had believed that all there was to introducing ripe queen-cells to nuclei or full colonies was just to put the cell in. Some colonies would accept them and some would not, and that was all there was to it.

That there is some variation in the temperament of colonies I do not dispute, but that this variation is so pronounced as is commonly believed, I do dispute. There are underlying principles governing the acceptance of queen-cells; and I believe if we could know them all and then play the game according to the rules, we would find that all colonies would act alike or at least nearly so. I might qualify the above statement by saying that I am considering a good strain of pure Italians that are bred fairly uniform in general qualities.

One of the great problems in queen-rearing has been to get the ripe cell safely introduced to the nucleus. Sometimes this was much easier than at others. Early in the spring when forming nuclei, this problem was so great as to be disastrous. Upon such occasions, I

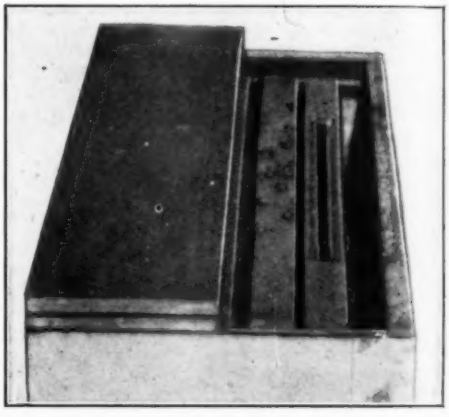
tried everything that had ever been advocated, but one was as bad as any other. In theory the cell protector would remedy this trouble, so I got 100 and used them. I kept a record of a hundred with protectors and a hundred without, and was quite surprised to find that the loss was considerably more when the protector was used than when the naked cell was given. Of course, the bees did not tear down the cell, but they seemed to say, "Well, he thinks he is putting something over on us, but wait till that virgin pokes her head out and we won't do a thing to her." And they didn't, except just to kill her.

It is well known that a colony will accept a cell better than a virgin queen, so, if they will not accept a cell without a protector, we may lay it down as a rule that they will not accept the virgin when she emerges. I tried the hundred protectors in comparative tests several times, and the results always showed that the protectors were a detriment rather than a help. According to my experience the use of the protector is built upon a false theory that the reason bees destroy cells is because the cells are strange, and by using the protector, it gives the bees time to get acquainted with the cell before the virgin emerges. I have proved to my own satisfaction that the fact that a cell is strange has nothing to do with its being accepted by the bees. This is contrary to what we have believed in the past, but before saying that I am away off, carefully read over what I have to say on the matter.

Several years ago when forming nuclei in early May, the bees were the worst at tearing down cells ever known with me. I expressed it at the time that there was a regular "epidemic" of cell-destroying. As fast as cells were given, they were destroyed. I had orders ahead, queens sold, paid for and the money spent, and those confounded little beasts were tearing down all of my fine large queen-cells. The loss ran from 75% to 95%. I tried everything, including the cell protector, peppermint water, the honey-daub method and the smoke method. I reasoned that, if it were the scent, a good fumigation with tobacco smoke would make everything smell alike. But just as soon as they came out of their debauch they tore down the cells.

I went to one side and sat down on a stump to think it over. I was literally "up a stump." In fact, I never was stumped so in my life. I am an optimist by nature and believe that almost everything the human heart desires can be accomplished if we only knew how. I felt perfectly sure that the matter of cell introduction would be quite simple if I only knew how. I carefully reviewed my experience for the past 20 years to see if the fact that the cells were strange was really the reason the bees destroyed them. If that were the case, how could cells be introduced?

For the first time I noted one feature in cell introduction that seemed to refute the theory that cells were destroyed because they were strange to the colony that was expected to receive them. That feature was this: When introducing cells, I would use a number from a bar; and, not needing all of them, the remainder were returned to a cell-finishing colony, no attention ever being paid to see that they were returned to the colony that built them. Usually they were returned to a colony that did not build them. Now here is the point, never was a cell torn



A division board feeder is supplied each queen-rearing nucleus. These are filled with syrup a few hours before introducing a queen-cell.

down that I could remember. It was plain that the fact that the cells were strange at least was not the only cause of cell destruction. It must be some condition of the colony.

Now, what was the main difference in the nuclei that were tearing down cells and the colonies that were building cells and would accept any cell? So far as I could see, the main difference was the fact that the cell-building colonies were being well fed while the nuclei were not. After they were formed, many of the fielders went back to their old hive; and as the young bees emerged they consumed lots of stores and, even though there was honey in the comb, the bees were in a hungry state. The deduction was that the reason bees accept cells was the fact that they were well fed. The reason they destroy cells is because they are hungry.

I became quite excited over the proposition and was eager to try it out. Accordingly I selected a number of colonies from which I expected to form nuclei and gave them two heavy feeds of thick syrup. I was so anxious to see if this would solve the problem that I slept little that night. Next day I formed nuclei from these well-fed colonies in the regular way, giving them ripe queen-cells with no protection. Later, upon examining these nuclei, I found practically every one had a fine virgin queen! Later experience verified this first one and proved that it is a matter of feed in getting all cells accepted.

This system works equally well on full colonies, and should prove a great benefit to the honey producer in requeening colonies. The procedure is the same. In requeening full colonies, give them a heavy feed of thick syrup, about ten pounds, in the evening and the next morning hunt out the old queen, remove her and give the ripe queen-cell. They will accept it every time. Since discovering the above we have division-board feeders in our nuclei, which are filled a few hours before the cell is given and the loss is very slight. Another fact in this connection is that a colony or nucleus does not have to be queenless any length of time before giving the cell. Remove the queen and give the cell immediately, and there will be no destruction of cells.

Why Bees Destroy or Accept Cells.

Having found out under what conditions bees accept cells, let us study the conditions under which they build and tolerate cells in their natural state.

Let us start with a colony in early spring. As the weather warms up and pollen comes on, the queen begins to lay worker eggs only. A little later the queen lays drone eggs, the colony is getting strong in numbers and the drones are flying. Now let a slight honey flow come on, and the bees will construct queen-cells, the queen will lay in them and the colony will swarm. At this time when the colony is preparing to swarm, there is abundance of food coming in, and the reason the bees will build cells and tolerate them is because they are well fed.

Now some will say that sometimes the bees will swarm in the spring when little honey is coming in. That is true, but nevertheless the bees are well fed, for they are getting some nectar and pollen, and in rearing brood they remove the honey from the cells to make room for the brood and they feed the larvae, so they themselves have food in abundance. When a colony is preparing to swarm, you can give it a ripe queen-cell and the bees will not tear it down. They are well fed and they accept the cell.

Now let us reverse the order of things. The honey flow begins to wane, and the bees refuse to build queen-cells. Let the honey flow still further slacken, and they cease rearing drones and destroy those they already have. Let the honey flow and pollen entirely cease, and the bees discontinue rearing workers. From this it will be seen that they rear queen-cells only during the days of plenty. Therefore, if we wish them to accept cells, we must, as nearly as possible, duplicate the conditions under which the bees naturally rear cells.

As to why bees will tear down cells and at the same time start new ones is discussed fully in my book, "Queen Rearing Simplified"; but, briefly, they do this under a natural instinct, for we often notice that in early spring the bees are building cells preparing to swarm when a cold spell comes on. They will tear down the ripe cells although they continue to start new ones. They seem to reason that if the weather turns warm soon they will want to swarm, so they destroy the advanced cells only; and as they have others coming on they will be delayed only a day or two. This does not occur very often with bees preparing to swarm, but in the case of superseding it happens quite frequently. Acting upon this same impulse they will, when hungry, tear down the ripe cell given them, while at the same time they are starting new ones.

I have observed many times in late fall when nuclei were in a hungry condition that they would tear down capped cells that they themselves had built, and at the same time they were starting new ones. Likewise in a colony that is being used for finishing cells, whether a queenless colony is used for this purpose or the cells are being finished above an excluder, the bees will accept newly grafted cells and continue the work on them while they will tear down the more advanced ones.

It has been observed by all queen-breeders that, when a honey flow is passing and the bees begin to tear down advanced cells, heavy feeding will remedy the difficulty. In a like manner a feed will prevent a nucleus or full colony from tearing down a cell when given them.

This matter of feed is also an important item in queen introduction. It has been noted by all that queens are easily introduced during a honey flow but with difficulty during a dearth of pasture. A good feed at night given just before the bees gain access to the queen will render introduction much more certain.

Vincennes, Indiana.

GOVERNMENT WORK IN BEEKEEPING

By Geo. S. Demuth

Some of the Achievements of Uncle Sam's Bee Culture Office at Washington, D. C.

As announced on the editorial pages of this issue, Dr. E. F. Phillips, Apiculturist, in charge of Bee Culture Investigations, Washington, D. C., will give up his present work this fall to take up new work as Professor in Bee Culture at Cornell University, Ithaca, N. Y. But few, if any, beekeepers fully realize the amount and the importance of the work that he and his associates working under his directions have done for the beekeeping industry during the past 19 years since he has been connected with the Bee Culture Office. The advent of his leaving is an appropriate time for a brief review of some of the things which have been accomplished.

Dr. Phillips attended Allegheny College, Meadville, Penn., from 1896 to 1899, where he received the degree of A.B. in June, 1899. He then attended the University of Pennsylvania from 1901 to 1905, where he received the degree of Ph.D., in June, 1904, and became Research Fellow in Zoology in 1904 and 1905. He was appointed to the Bureau of Entomology as Expert in Apiculture, acting in Charge of Bee Culture Investigations on May 16, 1905, and was appointed as Apiculturist in Charge of Bee Culture Investigations in February, 1907.

Dr. E. F. Phillips, well known to the beekeeping world, is leaving the U. S. Dept. of Agriculture to accept the position of Professor in Beekeeping in Cornell University.
—Photo by Underwood & Underwood.

Policy of the Office of Bee Culture.

During the nineteen years that he has been connected with the bee culture office the work has been done with the aim of helping those engaged in the production of honey and not of carrying on propaganda to induce a large number to engage in beekeeping. The policy has been to follow the slogan, "Keep bees better." This motto appears on many of the circulars sent out from the office and typified the effort of all extension work done during and after the war. The idea has been that the industry is not in need of more beekeepers but of better beekeepers, or at least better beekeeping.

It has been the policy of investigation work to learn the reasons for the things that the beekeeper needs to know for successful honey production. The purpose of the scientific work has been to learn "why" in every case and thus to present to those engaged in beekeeping a sound basis for their work.

While by the organization of the Department of Agriculture the bee culture office is limited to problems dealing with the care of bees and the production of honey, every effort has been made to encourage the establishment in the Department of Agriculture and elsewhere of agencies to assist the beekeeper in the marketing of his product. The organization of beekeepers for multual help has been fostered and probably half of the present organizations have been established through the efforts of the field men from the bee culture office.

Bee Diseases.

One of the first problems taken up by Dr. Phillips on assuming charge of the bee culture office was that of the destructive brood diseases of bees. At that time the cause of American foul

brood was supposed to be *Bacillus alvei*, which is now known to be a secondary invader and which does not have anything to do with the death of the larvae. The causes of European foul brood and sacbrood were not known. The bacteriological work connected with the bee diseases was turned over to Dr. G. F. White, working under Dr. Phillips' direction. Within a comparatively few years the causes of the three brood diseases were discovered. This work has been checked up by other workers, both in this country and in foreign countries so that the causes of the brood diseases are now definitely known throughout the world.

The distribution of these diseases for the entire United States has been worked out from samples received from all parts of the country, the records being kept in such a manner that the exact location of every sample of disease can be chartered on the map. This information has been given to apiary inspectors in the various states, and has been of great assistance to them not only in locating the bad spots for disease but in correct diagnosis as well.

The treatment of European foul brood has been modified and explained so that this disease is no longer a great menace to the industry. The distrubtion of European foul brood has been found to depend upon the time and the character of the main honey flow, which explains why it is not destructive in many good beekeeping localities.

The disease of adult bees has been studied, and Nosema disease has been found to exist in almost all parts of the country without doing much damage. Largely through the efforts of Dr. Phillips the inspection work of the several states has been greatly improved, this work now usually being administered by the various state entomologists, which results in more methodical and effective work. The factors limiting the time of attack of American foul brood has recently been worked out by Sturtevant and the results will be published shortly. About 1200 samples of bees and brood are now diagnosed annually for beekeepers and inspectors, the total number to date being over 11,000. This has greatly assisted beekeepers and inspectors in distinguishing between the brood diseases, thus enabling them to administer the proper treatment for the different diseases. The enforcement of the new law prohibiting the importation of adult bees and queens to prevent the introduction of the Isle of Wight disease and other diseases of bees which occur in foreign countries but not in this rests with the bee-culture laboratory.

Structure and Development of the Bee.

The work of Snodgrass on the anatomy of the adult bee (Technical Bulletin 18), the book by Nelson on the Embryology of the Bee (Princeton University Press) and a paper by Nelson on the Anatomy of the Bee Larva (soon to appear as a Department publication, are recognized as masterpieces in their respective fields. Snodgrass is now revising his work on anatomy, enlarging it to include physiology, and it will be published in book form in the fall. The rate of growth of the larva has been determined as well as the time consumed in feeding larvae, this having been published in Department Bulletin 1222.

Behavior of Bees in Winter.

The first work on the wintering problem was to determine the responses of the bee colony to changes in temperature, and the influences of different types of food on their behavior. From the results of this investigation it was possible to recommend certain definite methods of wintering, so as to reduce the enormous winter losses previously experienced by beekeepers in all parts of the country. The results of this work have appeared in Department Bulletin 93 and in Farmers' Bulletins 695, 1012 and 1014. Further and more extended discussion of these results are contained in a large manuscript which is approaching completion.

An investigation was made of the heat production of the winter colony and of the carbon-dioxid production, some of the results being published in Department Bulletin 988.

Behavior of Bees in Summer.

Studies have been made of the rate of increase in colony weight in correlation with various factors in the environment, and a paper on this is almost ready for publication. Studies have been made of the rate of increase and decrease in the amount of brood in the normal colony throughout the brood-rearing season, and a paper on this is almost ready to appear. This work has been continued and the results will be published later. Studies have been made of the methods of loading and handling pollen, of the handling of wax scales and of the temperatures in the colony in summer. A study has been made of the flight of bees, as correlated with temperature and other outside factors, and the results are soon to appear. An investigation has been made of the responses of bees to light, and this paper is now complete.

Physiology.

The utilization of various carbohydrates by adult bees as food has been investigated and the results published in brief form in Gleanings last fall. A more complete report of this work is ready for

publication. From this work, the cause of dysentery has been determined and methods for remedying this great source of winter loss are pointed out. The variations in the colors of American honeys have been measured for the purpose not only of establishing suitable marketing grades but especially to determine if possible the color ranges of honey for safe wintering.

Beekeeping in Various Regions.

Three Farmers' Bulletins have been issued, giving specific advice regarding the proper beekeeping methods for three of the main beekeeping regions of the United States, as follows: Farmers' Bulletin 1215; "Beekeeping in the Clover Region"; Farmers' Bulletin 1216, "Beekeeping in the Buckwheat Region," and Farmers' Bulletin 1222, "Beekeeping in the Tulip-tree Region." The various factors governing the secretion of nectar have been studied but nothing has so far been published, although some of this work has been reported in the various courses on beekeeping. Previous to these discussions, almost nothing had been done in this country on this highly important subject, although since then several persons have written papers regarding it. Other publications have been prepared on beekeeping in the tropics and in various sections of the United States. Bulletins have been prepared on beekeeping in Porto Rico and Hawaii.

Extension Work.

Beekeeping extension work was first begun in the southern states, but on the outbreak of the war was extended to cover practically the entire country. As the work progressed, the several states co-operated in the payment of expenses, and at the close of the war, as the Bee Culture Office was compelled gradually to decrease its expenditures, the work has been continued by a large number of the states. All the extension work now being done is the outgrowth of this work by the Bureau. After July 1, 1924, the office will withdraw from all co-operative work of this character, leaving it entirely to the various states to continue.

An important feature of the extension work was the giving of short courses for commercial beekeepers by members of the staff in all parts of the country. These courses lasted one week in each place, and in all about 30 courses have been given, the average attendance being over 100 commercial beekeepers.

Bulletins on General Beekeeping Subjects.

In addition to the results of specific investigations, a considerable number of bulletins giving information on beekeeping subjects have been prepared, as follows:

The Rearing of Queen-bees. Entomology Bulletin 55.

Production and Care of Extracted Honey. Entomology Bulletin 75, Part I.

Bees. First issued as Farmers' Bulletin 397 and revised as Farmers' Bulletin 447.

Commercial Comb Honey Production. First issued as Farmers' Bulletin 503 and revised as Farmers' Bulletin 1039.

Swarm Control. Farmers' Bulletin 1198.

Transferring Bees to Modern Hives. Farmers' Bulletin 961.

A Survey of Beekeeping in the United States. Entomology Bulletin 75, Part VI.

A Wasted Sugar Supply. Separate 747 of the Yearbook for 1917.

Honey, More Honey Needed. Circular 87, Part IV, Office of the Secretary.

Bulletins and Other Bureau Publications Prepared Since 1905.

Since May, 1905, a total of 56 publications pertaining to beekeeping have been issued by the Department of Agriculture, all these having been written in the Bee Culture office. In addition, seven publications have been prepared and published from other offices of the Department which pertain to beekeeping subjects, and which are distributed with the beekeeping publications. Nine manuscripts for bulletins on beekeeping are now in the hands of the editors of the department.

In October, 1919, a count was made of the total number of the various publications on beekeeping issued. At that time the total was 1,823,300, and it was found that for the first five years, 1905-1910, the average per year was 30,000, while for the years 1911-1919 the annual average was 152,500. Since then the number has increased until now the total of all such publications is 3,253,900.

Co-operation with Other Branches of the Department.

At the suggestion of Dr. Phillips and on material furnished by him, the following lines of work have been undertaken by other offices of the Department of Agriculture: A study of the chemical composition of American honeys (Browne) and of foreign honeys (Bryan); a study of the pollens found in American honeys (work in progress); a study of the chemical composition of the coloring materials found in American honeys (work completed and soon to be published); a study of certain chemical characteristics of beeswax (published several years ago); a study of the colors of American honeys, in co-operation with the Bureau of Agricultural Economics (results to be used in the establishment of honey grades). The establishment of the semi-monthly market reports of the Bureau of

Agricultural Economics was at the suggestion and with the assistance of Dr. Phillips. The reports on the condition of bees, winter losses, and honey crops issued four times a year, were also begun at his suggestion. The office (now bureau) of Home Economics has co-operated in the preparation of Farmers' Bulletin 653, "Honey and Its Uses in the Home," of which an enormous number of copies have been issued to housewives throughout the country. A study has been made of the effects on bees of spraying fruit trees in full bloom and the results are now in the hands of the bureau editor.

Bibliography on Beekeeping.

In connection with the various lines of investigation, it has been necessary to maintain a bibliography of papers and books on beekeeping subjects, and this is probably the most complete collection of this kind in the world. A total of over 29,000 titles have been included, these being arranged by authors and also by subjects. Whenever a paper in a foreign language is sufficiently important to require frequent consultation, a translation has been made; and there are now in the files hundreds of such translations which are of inestimable value to the work of the laboratory.

Dr. Phillips is a prolific writer, having published seventeen papers pertaining to beekeeping before he entered the Bureau. Since that time he has published 255 papers. Of these all but two are on the subject of beekeeping. This makes a total of 272 papers to date, among which is the book "Beekeeping," published by the McMillan Company in 1915. Several of these papers and bulletins have been republished after being translated into French, German and Italian. In addition to these nearly all the men engaged in scientific work in the bee culture office have prepared numerous papers for publication. The total number prepared by all these men amounts to 135 papers on beekeeping subjects during the past nineteen years.

THE BEEKEEPERS' PICNIC

By R. B. Willson

Lively Interest Created by Series of Contests; Adds Greatly to Value of Summer Meetings

What will be done at your association's picnic this summer? I presume you have a local beekeepers' association and that you have a summer picnic. A well-rounded existence for a beekeeper can never be completed without both of these essentials. We have thirty-five associations in New York, and the summer picnic meetings are red-letter days on our calendars.

Beekeepers' meetings usually have a threefold value: social, economic and educational. Such meetings are eminently successful when folks have a good time and learn something worthwhile, too. It was with this in mind that last year we planned a series of contests for picnic meetings. One season's trial with such a program is sufficient to convince us of its value for furnishing entertainment and teaching good beekeeping and so we unhesitatingly recommend its trial by others.

Smoker-lighting Contest.

The first contest employed was a smoker contest. The smoker is the most important apiary tool; and, despite its commonness and necessity, it is more often misused than used properly. The size of the smoker and fuel used have a direct bearing on the facility of handling the bees and also on the degree of damaging effect to the colony. An ideal smoke is a cool and voluminous one that does not unnecessarily disorganize the bees when applied and which is long burning and not disagreeable.

The beekeepers lined up with their smokers, empty and open. The fuel and matches were on the ground beside them. From the command "Go" two minutes were given to make a smoke when all lids had to come down. The smokers

A smoker-lighting contest at the Erie County, N. Y., picnic in 1923.

were then allowed to stand for half an hour when they were judged.

Question Answering Contest.

The above contest promoted the contest spirit and made the beekeepers eager for the next one—a written quiz on general beekeeping questions. We induced everyone to take part by handing out from a hat slips of paper with num-

bers written on them. The numbers were put on the papers instead of names so that no one need be embarrassed with his paper. The numbered slips were retained after the papers were handed in so that the winners might identify their papers with them.

This contest proved to be lots of fun. Questions of course should be asked that could be answered in a few words. Usually we asked ten. Here are a few samples of them. 1. Name in order of their importance the three largest honey-producing states in the Union. 2. To what part of the bee's body are her wings attached? 3. Who said, "Eat thou honey, for it is good"? 4. For the first time, in an apiary of 50 colonies, one colony shows up with American foul brood. What would you do?

The "What Would You Do" contest at the Orange County, N. Y., meeting in 1923. Colonies having some defect were exhibited and contestants were asked to tell what should be done to correct the defect.

Some of the answers to such questions were amusing. One man wrote in answering No. 3 "My wife." Many thought the quotation in that question the words of our Lord. Almost every state in the Union was mentioned for the honors in honey production. But answers that involved vital beekeeping practice like No. 4 were, except in rare instances, properly answered. The papers were first corrected, then the proper answers were given and the winners announced.

"What Would You Do?" Contest.

The third contest was no doubt of the greatest practical value. It was called "What would you do?" By previous arrangement with the beekeeper at whose apiary we were meeting, five colonies in some way abnormal were selected and these were exhibited in detail to the beekeepers, one by one. Here again the number system of identifying papers was used; and as each colony was shown, the contestants wrote down on their papers what they would do with that colony, were it theirs. After the papers were handed in, whoever conducted the contest read out what he would have done with those colonies, and on his recommendations the papers were graded and winners announced.

A Honey-grading Contest.

The fourth and last contest was in grading honey. Extracted honey in vials one inch in diameter was set up to be graded for color only, and comb honey in sections was displayed for complete grading according to finish, color and weight. The net weight of each section was printed on each section. For grading the extracted honey the Root or Lewis graders could be used as standard, and in grading comb honey the old rules of the National Beekeepers' Association were used. Each container of honey was numbered, and the contestants had to grade them without aid of a grader or sets of rules. Few proved to be expert in this phase of apiculture.

Should you put on contests at your summer picnic this year, make it clear in your call for meeting what you are going to do. Have everyone bring his smoker and best smoker fuel. Announce what rules you will use in your comb-honey-grading contest so that they may practice up beforehand. Also, secure a set of prizes for the winners. Your local bee-supply dealers and queen-breeders will be found to be willing to contribute. One bank in New York State offered a $25.00 cash prize for sweepstakes in all four events. The contest program minimizes the nodding heads induced by beekeeping orations and for getting every one to take part in the activities. It's a dandy.

FROM THE FIELD OF EXPERIENCE

FEEDER FOR QUEEN-REARING

Designed Especially for Feeding the Cell-Starting Bees in a Swarm Box

Mr. W. R. Reese of Indiana writes in regard to the article on queen-rearing (Gleanings, August, 1923, page 526-529), saying, "Every point seems clear except the manner in which the quart jar and feeder are connected."

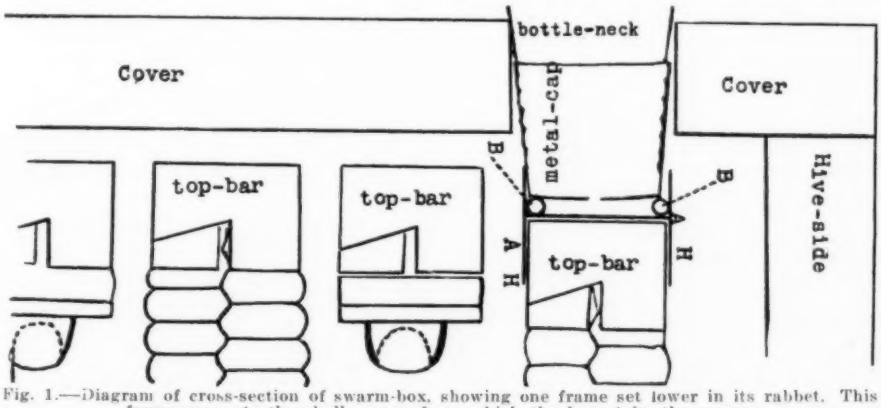


Fig. 1.—Diagram of cross-section of swarm-box, showing one frame set lower in its rabbet. This frame supports the shallow pan from which the bees take the syrup.

My feeder for the cell-starters in the swarm-box consists of a tin trough, waxed inside, the length and width of the top-bar of a frame, ⅜ inch deep, and held in place on a top-bar by bits of tin ¾ x ⅞ inch (Figs. 1 and 2, A), soldered at the sides, about 1¾ inches from the ends, and projecting downward over the

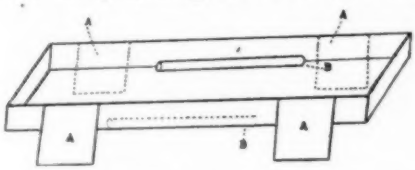


Fig. 2.—Tin trough feeder, length and width of top-bar; shortened in diagram.

sides of the top-bar as shown at H in Fig 2.

At the middle of the feeder, inside, and in the angle where side and bottom join, I solder two strips of wire, about two inches long, and nearly or quite 3/16 inch thick, as shown at B in Figs. 1 and 2.

To allow the bees access to the feeder as it rests on the top-bar of one of the frames in the hive or swarm-box, the rabbet for this one frame is cut ⅜ inch deeper than the rabbet for the other frames, so the top-bar of this one frame is ⅜ inch lower than the top-bars of the other frames, but, if desired, that part of the cover immediately over the top-bar of the frame on which the feeder rests may be recessed out or otherwise made so that it is sufficiently high to permit the bees ready access to the feeder.

In the cover of the hive or swarm-box, cut a hole that will just nicely admit the neck of a quart or pint bottle, preferably a bottle with a metal screw-cap or other tight cap. Cut a hole about ⅛ inch in diameter in the middle of this metal cap, fill the bottle with feed, screw on the cap, level the hive, and invert the bottle, placing the neck and cap down through the hole in the cover of the swarm-box, where the cap is supported by the two heavy wires soldered in the bottom of the feeder. The feed then flows out into the feeder, and as it is taken up by the bees, it is replenished on the atmospheric principle.

Of course, there are other feeders which may be used, but we have found this feeder to be very convenient where using the swarm-box for cell-starting, as it occupies practically no room in the hive, yet allows hundreds of bees immediate access to the feed. It is cheap and convenient, and where the cell-starters are fed a little time before grafting, results are usually more dependable.

For slow feeding of cell-finishing colonies, a pail or jar with a few very small holes in the lid, used on the atmospheric principle, leaving little to be desired; but where the nights are not warm, this feeder must be just above the cluster, so that the bees will feed from it continuously, and not, as in the Boardman feeder, at the entrance of the hive.

Meridian, Idaho. E. F. Atwater.

XUM

SAFE INTRODUCTION OF QUEENS

Cage Saturated with Odor of Old Queen Used in Introducing New One

It is a generally recognized fact that no other one factor over which the progressive beekeeper has control determines the degree of success in apiculture as does the quality of the queen. This being so, no reasonable expenditure of time or money should be neglected to head our colonies with desirable queens.

In practically every apiary will be found three classes of undesirable queens, viz.: those of inferior strain or race; those that on account of being improperly reared or handled during the first few days of their existence never were up to standard; and those that have outlived their period of profitable egg-laying. But it is costly to replace these queens, whether with those bought of professional queen-breeders or with those reared by the apiarist for himself, and this cost, coupled with the uncertainties of introduction, influence many beekeepers, consciously or unconsciously, to lower their standard in judging a queen and many go into winter quarters that should have been replaced in the fall.

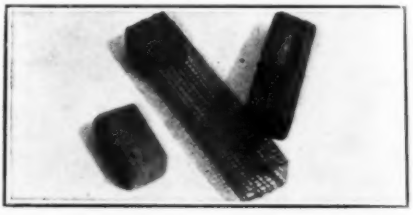
There is undoubtedly a great loss of valuable queens in introducing, and the colony destroying the introduced queen may in consequence also be without a laying queen long enough to decrease greatly the amount of honey stored. Then there is a percentage of balled queens finally accepted, but which on account of the rough handling by the bees never are as satisfactory as they otherwise should have been. It is in the hope of eliminating these losses and making it easier and cheaper to get rid of inferior queens that this article is written.

During the last two seasons we have been using an easily made cage and a simple method of introduction that has given uniformly good results, introducing about 200 queens with only one loss. The one we lost came to us through the mails and may possibly have been injured before being given to the bees.

The cage we use consists of two blocks, one ⅝x⅞x⅞"; the other ⅝x⅞x2¼", with a ⅜" hole bored through it lengthwise, to be filled with queen-cage candy. A piece of wire screen cut approximately 3½" square is bent in such a way that the longer block may telescope into one end of it and the smaller one be tacked securely into the other end.

The day before we wish to introduce a laying queen the old queen without attendants is caged by inserting a solid block instead of the candy block. Two top-bars in the middle of the brood-nest are pried apart and the caged queen squeezed between, the cage being placed horizontally. The next day the old queen is removed, the new one, also without attendants, caged in the same cage, this time with the candy block, and the cage put back again between the same two brood-frames with the candy end nearest the middle of the brood-nest. The colony is left strictly alone for the next five days when the new queen will be found laying. So confident of the results have we become that during the past season we have not opened a hive simply to find out if the queen was successfully introduced, many cages remaining between the top-bars of the brood-frames until the supers were removed at the end of the season.

It may be said that this procedure requires two successive visits and two manipulations of the hive. But I believe a great majority of beekeepers overhaul the brood-nests of their colonies a few days after putting in new queens,



Introducing cage with candy plug 2¼ inches long through the long block.

to ascertain whether or not introduction has been successful. As stated above, we do not now consider this visit necessary, so neither time nor labor is lost. And we find it a great convenience when introducing a batch of queens to have the old ones already caught and caged.

The reaction of the honeybee under manipulation varies so greatly under different conditions that it may be barely possible two seasons' test of this plan does not prove its absolute value. But we introduced under all conditions of honey flow and dearth, in all kinds of weather from April to October 15, and it would seem that if there were any conditions under which a queen cannot be successfully introduced to a colony previously queen-right these conditions should have been present during a two-year trial. The results attained and the ease and simplicity of the method are so far ahead of any other method we have tried that we should like to see it put to the test next season under country-wide conditions.

There are several reasons to which we ascribe our success in introducing queens in this way, viz.: the cage, the factor of

queen odor; the behavior of the queen toward the bees, and the behavior of the bees toward the queen. The cage itself is a good cage to use without previous confinement of the old queen, and it is particularly adapted to the plan of introduction in question. There is no one who has had extensive experience handling bees and queens who has not noticed the attraction the queen odor has for the bees. I have found many clipped queens by following a line of bees searching in the grass along a course taken by a crawling queen. How much stronger then must be the odor of the old queen caged in one place for a day, and the cage and sides of the top-bars are so strongly scented it is quite possible the bees never know there has been a change of queens!

The old queen found it necessary to seek food through the meshes of the cage. The bees accustomed to feeding her in this way offer food to the new one and thus a friendly and dependent feeling is established on both sides. And when the queen emerges from the cage she will do so with entirely different actions than if she had been surrounded during the first part of the introduction period by a seething mass of angry buzzing bees trying to ball her. Emerging in this way she will crawl quietly over the combs without that tendency to run and squeal which is the surest kind of invitation to the bees to begin the balling process. Never having been frightened by the bees she has no reason to fear them and she goes quietly about her work of filling the cells with eggs.

We have never tried to introduce virgins in this way, as we prefer to introduce to nuclei the day before they emerge from their cells. The introduction of virgins gives uncertain results except under the most favorable colony conditions, and we doubt if this method will give the same results as with mated queens. However, if any one should try it we shall be pleased to hear reports. Harry C. Kautz.

East Stroudsburg, Pa.

FERMENTATION IN HONEY

The Part Played by Moisture and Exposure of Honey to the Air

In the January number of Gleanings in Bee Culture there is a very interesting and instructive article by Dr. E. F. Phillips upon "Moisture Within the Bee Hive." Dr. Phillips' writings are highly instructive, and he shows in them that before they have been written a lot of careful study and thought has been expended upon them.

In reference to some of the causes of the fermentation of honey, incidents in my beekeeping career have forced me to the conclusion that the environment of honey has a lot to do with its fermentation. For many years at the Toronto Exhibition a prize was given for the best granulated honey. It was the aim of those of us who expected to show in that class to pick out for next season's exhibition honey in glass which would granulate. This honey did not always granulate as we expected and it resulted in the exhibitors digging granulated honey out of unsuitable vessels and putting it into suitable glass receptacles. After consistent, never varying experience that this honey always fermented after such changing, I have been forced to the conclusion that in removing the honey from one vessel to another the spores of fermentation in the atmosphere coming in contact with the granulated honey set up fermentation of honey that was formerly free.

Another thing which brings about fermentation in honey is to put bee-escapes under supers on hives and then leaving the uncovered combs in the supers for more or less prolonged time on the hive. Moisture from the brood-chamber, underneath, may condense and thin the honey in the combs resulting in fermented honey shortly after extracting. The shorter the time honey is left over the bee escapes the better, and in our climate to leave it there a week is very risky. There is also some risk if these combs are allowed to stand in an ordinary honey-house.

There are few beekeepers who are unaware of the fact that honey in the ripening process has to be evaporated more or less, depending upon the moisture in the air and soil. There are probably even fewer who know that if there is an opening in the supers, or even near the top of the hive proper, the air does not rush out of these openings but is drawn into the hive there and passes out of the entrance. Having ventilators in my supers this has been proven to me for many years. In closing I would like to add emphasis to the uncertainty in our section of country of being able to ripen honey by exposure to the atmosphere. The futility of this can here be proven by putting a thin layer of honey on a plate. If the honey attracts moisture it becomes thinner. Honey to be ripened by evaporation will do the same.

To expose combs of honey to currents of air, to leave extracted honey open and to have sour or decaying substances about only tends to bring about fermentation of honey. All such conditions should be looked after and avoided.

Brantford, Ont. R. F. Holtermann.

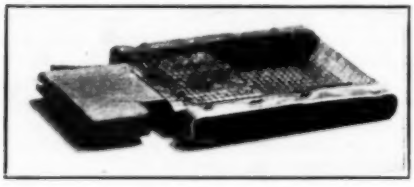
XUM

ANOTHER INTRODUCING-CAGE

One that Gives Bees Access to Queen Before She is Released

I am aware that every beekeeper has the best method, also the best introducing-cage in the world for introducing queens, according to his way of thinking.

Without any bravado on my part, I am sending you a sample of a cage I have been using to my complete satisfaction. I do not believe there is much explanation necessary as to how the cage is used. To use it I fill the hole, both in



Introducing cage with notched stopper and additional short candy plug at side. The hole at the side is covered with queen-excluding zinc.

the side of the cage proper and the passageway through the tin in the plug or stopper with candy. I then place the queen to be introduced, without any attendants, in the cage and push the plug down as far as it will go. In a few hours the candy will be eaten out of the hole in the side of the cage. The bees will then commence going in and out through the queen-excluder which you will see is fastened on the inside. Now the bees are getting acquainted with the queen while she is obtaining the hive odor of the bees to which she is to be introduced. I leave the cage undisturbed for about 48 hours after first placing it in the hive (perhaps a much shorter time will do, but I leave it 48 hours to be sure) then if the candy has been removed from the passageway in the plug, I refill it and push it back in the cage as

Stopper withdrawn to show folded tin, forming opening for candy.

before, but this time I do not push it clear down. I leave the plug out far enough so that the queen when she is released by the removal of the candy can crawl out by way of the notch left in the side of the plug. After drawing the plug thus part way out I do not look in the hive again for 4 or 5 days, when I invariably find the queen O. K., and in most cases laying. The cage is so narrow I simply hang it between two brood-frames after pushing them apart a little.

Puyallup, Wash. J. W. Peterson.

[The short candy plug at the side of the cage which on being eaten away permits bees to go into the cage before the queen is released through the long candy plug in the stopper, is the Chantry principle. (See Gleanings, August, 1919, page 497.) It is also used in the Jay Smith introducing-cage. The notched stopper which can be pushed down to prevent the bees from having access to the long candy plug is the principle used by the late Dr. Miller in the Miller introducing-cage. See Gleanings for August, 1923, page 536. The combination of these two principles should give good results.—Editor.]

INTRODUCING IN TWO STORIES

Loss of Queens Sometimes Results from Queen Cells Built in Other Story

Five years of experimenting with double and triple ten-frame hives has convinced me that the tried and true methods recommended for single-story colonies are not always a success with the larger hives.

On reading Jay Smith's article on the result of requeening when a frame of honey is left between the combs of brood on page 517 of the August, 1922, issue of Gleanings in Bee Culture, I started an experiment to see if the same result would occur where the brood-chamber was in two stories. I requeened six colonies with young clipped queens, three in the upper story and three in the lower. I opened the hives nine days later to find all queens but one laying in the upper story, and she was below. In four of the colonies, the one below and the three requeened in the upper story, I found ripe queen-cells in the hive-body which the queen was not occupying. As no nectar was coming in, I closed the hive and awaited the result. In due time the three colonies, where the queen had been put in the upper story were occupied by young unclipped queens, but the one whose queen was below was not. Evidently the queen went up in time to stop the raising of the queen-cells. Twice since I have tried the same experiment. One time all were accepted and no cells were started. The other time I lost five out of nine. I was convinced that the newly accepted queen killed the cells in the one story, and never dreamed of another story until a young virgin climbed up and thus ended her reign.

St. Charles, Ia. Paul Laird.

SIFTINGS

by J. E. Crane

"It is none too early for those who expect to use food chambers to complete arrangements for having these filled with the best of honey during the early honey flow," says an editorial, page 354. All of which is quite true. I have been amused in watching how the trees grow. As soon as the buds burst and new growth starts, new buds are started at the base of the leaves for next year's bloom and growth. Shall we not be as wise as they?

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Jay Smith is quite right in saying on page 359 that as good queens can be raised in the simple way he gives as can be reared by any other method. Mr. Smith has great faith in feeding larvae for queens all they can be made to take and then some.

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The experiments given by Dan H. Jones, commencing on page 364, with various solutions in sterilizing combs, is another rung in the ladder that is going to lift us above our bondage to foul brood. The fact that a comb after treatment with formalin when rinsed with water would remove all objectionable odor is, I believe, new and of considerable value.

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That was a great exhibit at the Ohio State Fair as described by E. R. Root on pages 366 and 367, and we just enjoyed Mr. Benninghof's advertising stunt. Well, no! I don't think many of us old-fashioned beekeepers would care to try it. However, whether by guile or more legitimate ways we do rejoice that more and more honey is being advertised and used.

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Mention is made on page 354 of the use of honey in bread-making. Can anyone tell us in what way it is superior to sugar for this purpose? Is the bread lighter or finer flavored? No doubt it would increase the sales of honey immensely if it could be generally used for this purpose, but there must be some strong points in its favor before we can expect bakers to adopt it.

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The Editor of Gleanings makes a pretty good point in favor of queen-excluders when he tells us that the ordinary excluder with wire strips has the equivalent to an opening six inches wide, the full length of the inside of the hive, and when a full ⅞ entrance is used, such an excluder has nearly eight times as much room for bees to pass as the entrance and even the spaces between the combs of a ten-frame hive are less than half that of the excluder. I would not have thought it. Yet I have noticed how rapidly a swarm goes through an excluder when it is shaken into a super with an excluder in the bottom, about as fast, in fact, as I can shake them in. I believe it is time the theory that excluders hinder bees from storing honey above them was laid on the shelf. See page 355.

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Izal, chlorazene, as well as Be-Helth, were all tested by Dan H. Jones for the sterilization of bee larvae, and all found wanting. We may cross them out. The fact of Professor Jones being able to disinfect combs with a 20 per cent solution of formalin and water may prove of great value as it will cheapen the cost of treatment. There is no reason why beekeepers should go around with the corners of their mouths turned down. See page 365.

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Many are the rules given to prevent swarming, few of which have proved always successful, and it seems doubtful if we ever find any single method that will always work without curtailing our crop of honey. From our own experience the way A. V. Small gives on page 370 and 371 has given us the best results, at least the fewest swarms with the largest yield of honey. It will well repay any young beekeeper to study his treatment or methods very carefully.

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I can hardly agree with Leslie Burr that it is necessary to shake all the colonies in a yard of bees where only a part of them are diseased with American foul brood as he advises on page 389. I have in the past fifty years had this disease get started among my bees several times, and have had little difficulty in ridding my yards of it by shaking only diseased colonies.

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John C. Hogg says on page 380 it is a safe way to hold a queen by the thorax when clipping the wing of a queen. I doubt much if I could do it that way safely, as my control over my fingers is not sufficiently delicate. Oh dear! we are all so different.

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Mention is made in June Gleanings one or more times of hiving bees on foundation. Our experience shows it is much better to hive on drawn combs or at least one or two drawn combs with the foundation.

XUM

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.— Taken as a whole, the month of May was one of favorable weather conditions so far as the beekeepers were concerned. In most localities, the oranges continued to yield a little honey until about the twentieth of May. The black sage also yielded a little nectar. This was followed by the wild buckwheat which is now (June 5) about at its best. Reports of the orange honey yield are all the way from nothing to 80 pounds per colony. Several reasons are given for this variation; and of one thing all are agreed—that it was only the strong colonies that stored any surplus. Weak colonies that were left on the old location, in place of being moved, built up and did better than like colonies that were brought to the oranges. The orange honey is of fine quality and very dense of body. Cool weather prevailed during the extracting period; and the beekeeper who got his honey off had ideal weather for moving his bees back to the summer location. These weather conditions were probably the cause of the bees packing the brood-chamber much fuller with honey than usual. Most beekeepers find their bees well stocked with winter stores. But the southern California honey crop for 1924 is sure to be considerably below normal.

Buyers seem to have been around more to see how much of a crop was made rather than with the idea of buying much honey. The prices do not seem to be fixed; but most apiarists seem to think that the orange honey should bring from 12 to 15 cents per pound.

One beekeeper with whom we talked a few days ago, and who produced 18 tons of orange honey this year says, "The market price of honey does not bother me as I sell all I produce; and some that I buy for a trade I have built up in produce stands and retail stores in the vicinity of Los Angeles." When one observes the constantly growing number of these oil stations and roadside stands he can easily see what a great opportunity there is for keeping honey before the buying public.

The May meeting of the Riverside County Beekeepers' Club was held at the Farm Bureau rooms in Riverside with a goodly number of beekeepers present. A. K. Whidden, a very successful honey producer, spoke on the subject of getting bees ready for the oranges and then taking them back to the sage. Some of the points brought out were to have plenty of stores at all times and an examination of all colonies early in January to find the condition of the queen and her work. Also be on the lookout for any signs of disease, especially European foul brood. Winter in two stories and have the brood-nest next to the cover of the hive in early spring. It takes a frame of honey to raise a frame of brood. Do not put any brood through the extractor when taking off honey. Some colonies moved from the oranges to the sage weighed 100 pounds each.

Quarantine regulations which prohibited the moving of bees from California to Utah and Idaho very materially interfered with the plans of a number of apiarists who had expected to make increase and ship to those states from San Bernardino and Riverside counties. No case of the foot-and-mouth disease has been found in Riverside County, and only one herd was infected in San Bernardino County. Restrictions have been very much modified during the last few days, but whether or not they will be removed so that these shippers can get their colonies north in time to gather a crop is a question. Taken all in all, people have been very patient during the trying conditions of this epidemic and very little complaint has been heard. Aside from inconveniences such as stated above, things have gone on about as usual until now one scarcely hears anything about it at all. L. L. Andrews.

Corona, Calif.

* * *

In New York— Although the legislature in this state had adopted a policy of retrenchment and strict economy in its last session, beekeeping was given generous support. After a long struggle funds were appropriated for re-establishing the professorship in apiculture at Cornell. Federal support of extension work in New York will be withdrawn after July 1, and the legislature provided for the deficiency. Liberal support was also voted for apiary inspection. The name of the man who will fill the chair at Cornell will be announced at an early date.

The securing of this generous state aid in such a year is an accomplishment. It was made possible, however, only by the organized effort of the Empire State Federation of Beekeepers' Co-operative Associations, Inc., under the direction of H. E. Gray, its president, and Leon E. Hall, its secretary-teasurer. When it is recalled that for five successive years the chair in apiculture had been asked

for by the State Association, it becomes evident that organization pays, although results may not be immediately forthcoming. This for other states that may be losing heart.

Death by accident, on May 29, claimed Joel W. Mome, millionaire and beekeeper of Millbrook, N. Y. Although immensely wealthy, Mr. Mome was always democratic and much loved by all who knew him. He was vice-president of the Dutchess County Beekeepers' Co-operative Association, Inc.

At the Farmers' Field Day in Erie County, N. Y., between this writing and the date of publication, the Erie County Beekeepers' Co-operative Association, Inc., will give numerous prizes of generous lots of honey to those under 18 years who submit the best essays on the uses of honey. The prize essays will be read and published. This is an excellent way to get some of our much sought-for publicity on honey. If it's not too late, see your county agent about such a project in your county.

The season is late. May has been cold and wet. Clover is in excellent condition, but bees are backward. The outlook for a honey crop is down now to about 80 per cent, except in the buckwheat region, where planting of that grain is expected to be heavy.

Ithaca, N. Y. R. B. Willson.

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In Northern Michigan.—Colonies up here came through winter in fine condition—but the weather to date has had much to do with the difference in the conditions of outdoor-wintered and cellar-wintered bees. During March and April up to the 24th the weather was very nice. The outside bees built up strong and are today in excellent condition if the matter of stores has not been neglected. Our bees were taken from the cellars April 23; and since that time up to today (June 5), which is our first real June weather, the temperature has been low. Cold rains and north and east winds have kept the bees in the hives.

The result is the cellar bees are in poor shape and generally stores are very low—many colonies starving. In fact, I am writing this in the wax-room where I am heating up honey, to feed to the bees in open feeders, as I can not get into the hives to feed combs of honey without the bees robbing. I have found that a few days of out-of-door feeding will result in the bees stopping robbing and then they may be gone over and the combs of honey placed in the hives with safety.

It is surely trying to attempt to feed combs of honey when the minute one opens a hive robbers pounce on the combs and then robbing is almost sure to start, following the closing of the hives. I find that good strong colonies often will be robbed out along with the weaker ones.

I notice that the raspberry brush has been killed quite extensively and the buds are not as profuse as is usual. All plant life is very late, and it certainly does not look very promising for the white-honey flow. The milkweed bloom in July may prove our salvation as previous weather conditions do not seem to make much difference with this plant except as it exists a short time prior to its blooming, and, of course, during the bloom.

Little buckwheat ground is being prepared; but often ground planted to corn, which does not do well on account of frost or cold weather, is dragged up and later the ground sown to buckwheat.

I am trying out the Hutzelman solution on some diseased foul-brood combs. The fumes are surely strong enough. They ought to kill anything. The timely article by Dan H. Jones, June issue of Gleanings, is surely very interesting, but I feel that, even though the formalin-water solution killed the germs in the tests made, it may still be proven that the alcohol will be necessary to reach all of the germs, as the water does not penetrate where the alcohol does. There are many hidden recesses in a hive, and on a comb that water will not reach. Surely we shall very soon get the true facts as they exist and be able to cope with this dreaded disease at a very nominal expense.

Honey generally is pretty well cleaned up. I do not know of any comb honey in the hands of the producer and very little is offered at the stores. Some few beekeepers have retained some white extracted for bottling for the summer-resort trade. Ira D. Bartlett.

East Jordan, Mich.

* * *

In British Columbia.—Present appearances point to a good year for honey in British Columbia. Bees generally are in first-class condition, having wintered exceptionally well after the mild winter. The building-up season this spring has been very favorable as the weather was fine during the dandelion and fruit-blooming periods, although the nights were somewhat cold with an occasional frost. Dandelions, which were not very numerous here at one time, have increased amazingly and are spreading rapidly everywhere. In this district (June 2) raspberries, blackberries and loganberries have commenced to bloom and the

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bees are now busy working on them. A report just to hand from the dry belt states that bees there have been working for some time on the hairy vetch which is largely used as a cover crop in the orchards. White clover has started to flower but I have not yet observed any bees on it. Usually it does not yield nectar freely here until about the end of June or beginning of July. The dogbane, which is one of our most important honey plants, is showing up well, and it will not be long before it is in flower. Occasionally the young growth gets cut down by late frosts from which the plants, which are perennial, do not recover for a season or two. Fireweed is pushing up its tall stems as vigorously as ever and looks far more promising than it did last year when it yielded very little nectar. We had a nice rain a little over a week ago, which was general over all sections of this district, after several weeks of dry weather, and vegetation of all kinds has benefited in consequence.

Two packages of bees from Mississippi, which were shipped on May 2, arrived in Nelson on May 8, in splendid condition after the six-day journey. There was scarcely a dead bee in either of the packages and the bees on arrival appeared to be as bright and lively as when they were first caged. The cage used is certainly a good one and has several features new to me, which seem to be great improvements on the ordinary shipping cage. The sides, instead of being covered with the usual wire screen, have thin boards nailed on, the wire screen being at top and bottom, which gives ample ventilation. The bees are therefore almost entirely in the dark during the journey and appear to travel more contentedly without distressing themselves by useless efforts to get out. The food supply consists of thin sugar syrup in a can securely fixed on its side which has a cotton wick projecting about three inches from the screw-cap, by means of which the bees can obtain as much food as they require during transit. Instead of the bees being put in at the top, as is usual with most cages, there is a round hole at one end for this purpose. The small cage containing the queen is fastened to the square piece of board covering this hole so that when it is taken off to liberate the bees, it comes away with it and it can be seen at a glance if the queen is alive and all right. As she is fastened in with a few bees she is in just the right condition to be accepted right away. On the outside of the package the following apt notice was printed in red ink: "Keep out of sun and away from steam pipes. Live bees—rush through. Please handle carefully. Do not pile anything on them."

The Provincial Exhibition at New Westminster, which will be held from September 8 to 13 this year, promises to be a greater success than ever. In addition to the usual classes for honey, etc., the Exhibition Association is offering extra prizes amounting to $200 for the best 500 pounds of honey and products "commercial pack." First prize, $100; second prize, $50; third prize, $35; fourth prize, $15.

W. J. Sheppard.

Nelson, B. C.

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In Iowa. — Prospects in eastern Iowa for a bumper honey crop are everything but promising. I thought I had seen bad springs, but I do not think I have ever seen a spring when the bees were handicapped for so long a time.

As I have mentioned before, bees had to be fed last fall to pull them through, and we put the feeders on 50 per cent of our colonies immediately after taking them out of the cellar. They are not off yet, but I think we can stop feeding now.

There have been too many days when the bees were confined to the hives on account of cold weather. Days that the sun shone they would get out after pollen and many were chilled which has lowered the strength of the colonies very materially. We managed to get three or four good days about the 15th of May when we went through and clipped the queens, the first time we had opened the hives as well as the last. There have been very few days when it would not have been detrimental to open hives for any length of time so we have been beekeeping on the "let-alone plan."

To make matters worse we are badly in need of rain. Very little rain has fallen since the snow went off, and if we do not get it soon and plenty of it there will be no glutting the market with honey from these parts.

However, we are optimistic, as beekeepers generally are, and we are hoping for the best. We have seen it get just as wet in Iowa as it gets dry sometimes and things may come out better than they look now. With the bees having such a hard time of it and the lack of moisture thus far, I cannot see how there can be a big crop unless something very unusual happens. The clover wintered fine, but we cannot help thinking that the dry weather has shortened the honey flow even if we do get the needed moisture.

There seems to be a moderate demand for honey caused, no doubt from the canned fruit running low, but with the

berry season close at hand the demand may be expected to drop off somewhat which is common at this time.

According to all reports, Dr. Brady's article has done more harm to the sale of honey than a fair-sized campaign of advertising would be beneficial. Yes, friend Crane, "a little knowledge is a dangerous thing," especially when the guy who has it is educated well enough along other lines to write an article grammatically correct, and when he has a prefix to his name he can usually get some editor to fall for the article and print it regardless as to whether there is a grain of truth in it, or whether it is detrimental to other classes.

There are editors who print articles because they are free from grammatical errors. It saves them work. I know of an article printed lately in a poultry journal that was bunk, and written by one who has had little experience in what he was writing about as the article showed. When the editor was confronted with the question as to why he allowed such a misleading article to get into print he remarked that he printed it "because it was grammatically correct!"

Let us have facts if they do have to be fixed up a little rather than articles that do not even make interesting reading to those better informed even though "grammatically correct." We are "going some" these days and do not have time to wade through a lot of "stuff" that isn't true; besides, no editor has any moral right or any other right to print articles that are falsehoods and injure others in doing so. An article to these magazines from Gleanings and the American Honey Producers' League rectifying Brady's misstatements should be written and insist on its being printed. [See editorials.—Editor.] It might be somewhat humiliating to the gentleman in question, but it might be a hint that "fools rush in where angels fear to tread." W. S. Pangburn.

Center Junction, Ia.

* * *

In Minnesota.—May 1 is the usual time for computing winter losses, but this year the time should be May 20. Lack of pollen and nectar due to continuous cold and wind stopped brood-rearing and the weaker colonies and those with insufficient stores perished in large numbers during May. Strong, well-fed colonies kept on growing in spite of the weather; and with the coming of dandelions and fruit bloom in the last part of May bees began to swarm.

A short course was held at the University Farm, St. Paul, May 13-16. About sixty attended. The course was given in three sections. Section one was the foulbrood course with practical demonstrations of foul-brood treatment. Section two dealt with practical beekeeping in general. Section three was shop work. This is just the spring short course. In addition to it there is a one-week short course in January, and many one-day courses in different parts of the state, field meets, lectures and demonstrations before clubs and organizations, and other ways of spreading beekeeping knowledge.

The latest development in Minnesota beekeeping is the adoption of the bees and honey project among the boys' and girls' club activities. Premiums of $250 are offered by the State Fair and the Extension Department for exhibits of comb and extracted honey, beeswax, bees and honey frames. Boys and girls less than 19 years of age are eligible. The county agents are the leaders. It is the intention to enroll as far as possible boys and girls of actual beekeepers. The instructions for handling of bees are sent out from the Division of Bee Culture, University Farm, in the form of bi-weekly bulletins.

There is a great influx of beekeepers into the Red River valley of the North on account of the fabulous yields of honey per colony during the last two years from sweet clover. Many of these are not practical beekeepers and are going into bees as a quick means of making money. In a year or two somebody may be able to buy bees and some expensive outfits at a bargain.

St. Paul, Minn. Francis Jager.

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In Ontario.—Someone has said that farming is gambling with the weather. I am not going to argue the question pro or con, but if farming does come under that definition, what about beekeeping?

A month ago, when sending in monthly notes, prospects as regards bees and honey sources would rate as 100 per cent. Today, one month later, it would be hard to make an estimate; but, in our immediate locality at least, I would say that prospects are not more than 60 per cent of what they were a month ago. As regards the bees, colonies that were very heavy have held their own remarkably well, considering all the adverse weather we have had. But many that ran short of stores about May 10 have gone back badly. Usually we finish clipping and spring examination by the end of May at the latest. This year, on June 10, we are not quite through all colonies; and by the way the bees acted today even with apple blossoms still in evidence, it looks as though a few colonies will not be examined fully till clover comes on.

XUM

As regards clover, fields high and well drained have held up fairly well, but low fields show the effect of too much rain and the late spring frosts that we had for several nights in succession about May 20. Clover is the latest that I have ever observed. June 9 I walked through a field of alsike, and although I looked carefully, I could not find a bud, not to speak of a bloom. Prospects are still fair as intimated where bees have had an abundance of stores; but, unfortunately at least in our case, majority of colonies are very short of stores and in three out of ten apiaries in the home section we shall have to start and feed and keep on at the game till clover opens. When that will be is problematical, but by the present outlook it will not be much before July 1.

Previous to the embargo going into effect in regard to the importation of bees on combs, I had bought some bees in the South for spring delivery. Just here I might say that I am not among those who believe that package bees arrive in as good condition as when they are shipped on one or more combs. But this is no criticism against the embargo, for the legislation probably is all for the best. Not being able to get the bees on combs, some packages were purchased instead. Unfortunately many arrived in a damaged condition, but enough in fair shape to give them a testing out in regard to kind of stores best for them early in the season. As we were starting a new apiary, packages placed there were given liquid food, and some placed in other yards were also thus cared for. A smaller number were given combs of honey, and whether it is because of the backward season or not I cannot say; but in almost every case those given combs of honey did better than those given liquid food. We had unusually cold wet weather all through May and the first week in June, and I have an idea that the liquid food caused more excitement and the bees flew out more and were lost in the treacherous weather. Another year might tell a different tale, but the difference in favor of the sealed honey in combs was so great that if we ever got packages again, an effort would be made to have dependable combs well filled with honey, ready to be given the bees on arrival.

Very little honey seems to be called for these days; and fortunately there seems to be little old honey left over. Quotations are still made daily in the papers, but inquiry seems to indicate that these quotations are purely nominal. I have learned of a few sales being made at very low figures, but this is no criterion to go by, as some with old honey on hand prefer to cut heavily in price rather than carry over to another season. Trade is rather slow in most commodities so we can not look for anything out of the ordinary regarding movements in honey, but with old honey out of the market that is one strong point in favor of handling a new crop when it arrives. J. L. Byer.

Markham, Ont.

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In Florida.—During the orange-honey flow which here in the high clay hills of Pasco County, Florida, was unusually long and with abundance of nectar this season, I hived a swarm of three pecks of Italian bees which came to my beeyard on Wednesday afternoon. The following Wednesday they had eight full sheets of foundation drawn out, three with brood and the rest nearly full of honey.

Since the orange flow started, which was in the middle of March, when I captured this swarm, they have filled four supers of comb and one of shallow frame, or a total of about 128 pounds of honey, and they are now just getting a good start at this date, June 3, on the palmetto flow, which is our heaviest nectar plant in this section of the state.

Palmetto in this section is not so abundant, as it is native to the low flat lands; but here we have some on the rich lands of our high hickory hammocks, around our beautiful clear springs, which grow to a good size and bear an abundance of bloom, one stock here being, in my opinion, equal to an acre of it in the flat wood sections.

Coral vine, or *Rosa de montana*, a vine with fast-growing leaves similar to the grape, grows all over porches and arbors here. It has a pink cluster of flowers like the lilac; blooms from May to November, and secretes nectar the entire day. Bees work on it from sunrise up to sundown, and even after twilight. It is not mentioned in any bee book I have been able to get, but is mentioned by Frank Sterling, of the State Plant Board at Gainesville, Fla., in his pamphlet, "Florida Honey Plants." I believe it is a wonderful plant for beemen to plant along fence rows, hedges or porches, as it carries bees through periods when there is no other honey flow here, which is very seldom indeed; but it surely keeps them busy at all times. I do not know that it is confined to peninsular Florida, but believe that it is. It is the only plant I know of that secretes nectar six months of the year, and from daylight to night every day, rain or shine, in that time. R. A. Snyder.

Dade City, Florida.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Speeding Up Slow Colonies. A colony of bees that is apparently normal but lacking in activity when others are forging ahead is out of balance somewhere. If a failing queen is found to be the cause of the inactivity she should be replaced at once by a young one. Queens are generally readily accepted by such colonies during the honey flow. Soon after their introduction activity will prevail and the colony will become a prosperous one. If a colony run for comb honey with a failing queen and consequently light in brood and bees cast a swarm, the swarm should be hived in with a nucleus that has had combs of emerging brood added, killing the old queen at time of hiving. If the old queen is clipped it will greatly expedite matters. Of course the nucleus should contain a vigorous young queen.

East Avon, N. Y. A. C. Gilbert.

Conveniences for Lighting Smoker. Sometimes it is a fussy job to light a smoker. To remedy this, procure a tin cylinder some 3 inches long and a trifle smaller than the firebox of the smoker (an old fruit-can with the bottom cut off will answer), also procure an old tin box 5 or 6 inches deep. Roll up the fuel and shove it into the cylinder, crumple a piece of paper and drop it in a corner of box, holding the fuel over the flame until it is well started, then push it out of the cylinder into the firebox of the smoker, when the smoker is ready for business. The metal cylinder prevents the flame from running back on the fuzz and ravelings of fuel. Smoker fuel to burn well should be rolled up rather loosely. When done using the smoker, lay it in the tin box placing the nozzle against the side of box, and it will soon go out. It would be quite a convenience if manufacturers would furnish a cylinder with the smoker. Wm. Findlay.

Basco, Ill.

Short Cut in Nailing Frames. In using the nailing device for nailing frames, we place the form filled with frames on an inner cover on the floor with the top-bars down. The nailing form is then removed, a hive body inverted and set down over the 10 frames as they were left from the nailing form. The end of the inner cover is then lifted and the hive body righted, placing the frames right side up in the hive body. This is quite simple, yet it constitutes a saving of perhaps a half minute per hive body over doing it by hand. Some persons may not have happened to think of it in this connection. It is also easier. Kenneth Gallant.

Ithaca, N. Y.

Making Spacers Wider. In talking to B. F. Kindig last summer he told me of his way to make the Hoffman frames wider spaced, so that 9 instead of 10 frames fit in the supers. He does this by nailing a short section of the spacing tin, as used on metal-spaced frames on the flat side of each end-bar of the frame. I did this on all the frames of honey for the food chamber. I like Mr. Kindig's idea; I think it quite novel. It gives the bees a little more room to cluster in and be that much more comfortable, I imagine. My frames were placed 10 in a super last summer, so they are not quite as thick as they would have been had the extra spacing tin been nailed on before filling. The coming season I will have the super frames all so spaced (9 to a super) as given to the bees. I feel sure, as Mr. Kindig said, that such combs will be easier to uncap.

Chicago, Ill. G. J. Griesenauer.

Swarming Propensity of Apis Indica The native bee of Ceylon is apis indica, whose habits and temperament are quite different from those of the European varieties of bees in many respects. These little bees of Ceylon are excessive swarmers and appear to be very keen on the matter. They take no heed whatever of the modern methods adopted to control swarming, and even dequeening seems to have no effect on them. Here the swarms generally issue in the end of February at the very outset of the main honey flow.

This season I allowed the first swarm to issue naturally and hived it on the old stand with full sheets of foundation. As the wings of all queens were clipped I put on an entrance guard to each of these new hives, so that they might not be lost in case the bees absconded. A week after hiving these swarms I looked into the hives and, to my great disappointment, I found most of them were queenless. I then took off the entrance guards and there I found the thoraces and heads of the lost queens, the other parts of the queens having been evidently removed by the bees through the perforations of the entrance guards. These bees are a

very persistent race, and on their eagerness to abscond, and realizing that their queens were unable to get through the perforations of the entrance guards, pulled the queens out of the perforations until they were almost dead. They then removed all the possible parts of their bodies which went through the perforations. C. A. G. Ferguson.

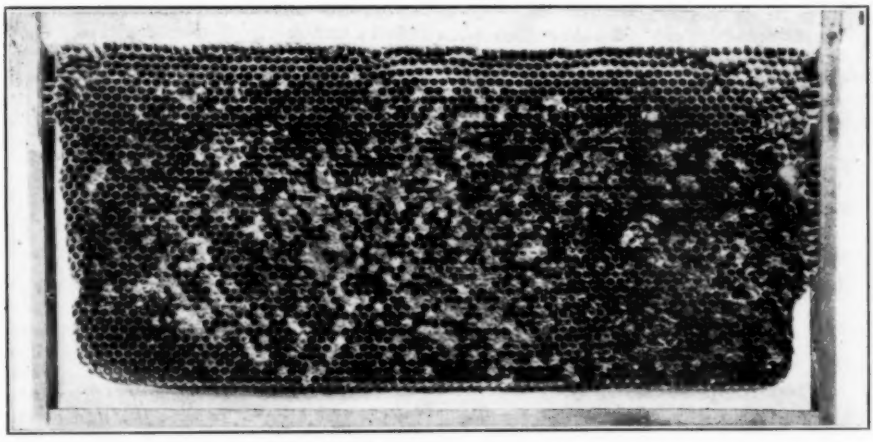
Wagga, Ceylon.

Disposing of Cross Bees. In making manipulations, a little accident may start several bees "on the prod" in the most gentle colony. I find it good practice to settle with them at once. They are bound to sting; and when a bee gets that way, she means it; she doesn't mean maybee. The method described in the A B C and X Y Z of Bee Culture is good. Get a little slat, about two inches wide and a foot long. Make it fan before your face, after withdrawing far enough to give the fighters a chance to quit if they want to quit. If they don't, they will fly right into the fanning stick and then there will be a grateful silence about your ears. I have noticed that a few bees that "get that way" in a certain hive keep it up, day after day. At least from that hive a few angry buzzers will proceed, ready for death or damage, while all others will be gentle. If let go, they will attract others by their angry whining. Get those few and all becomes quiet again. But don't fight them right in the path of the other bees in coming and going or you may have a lively battle on hand, as others hear the war song. Go aside and settle it there.

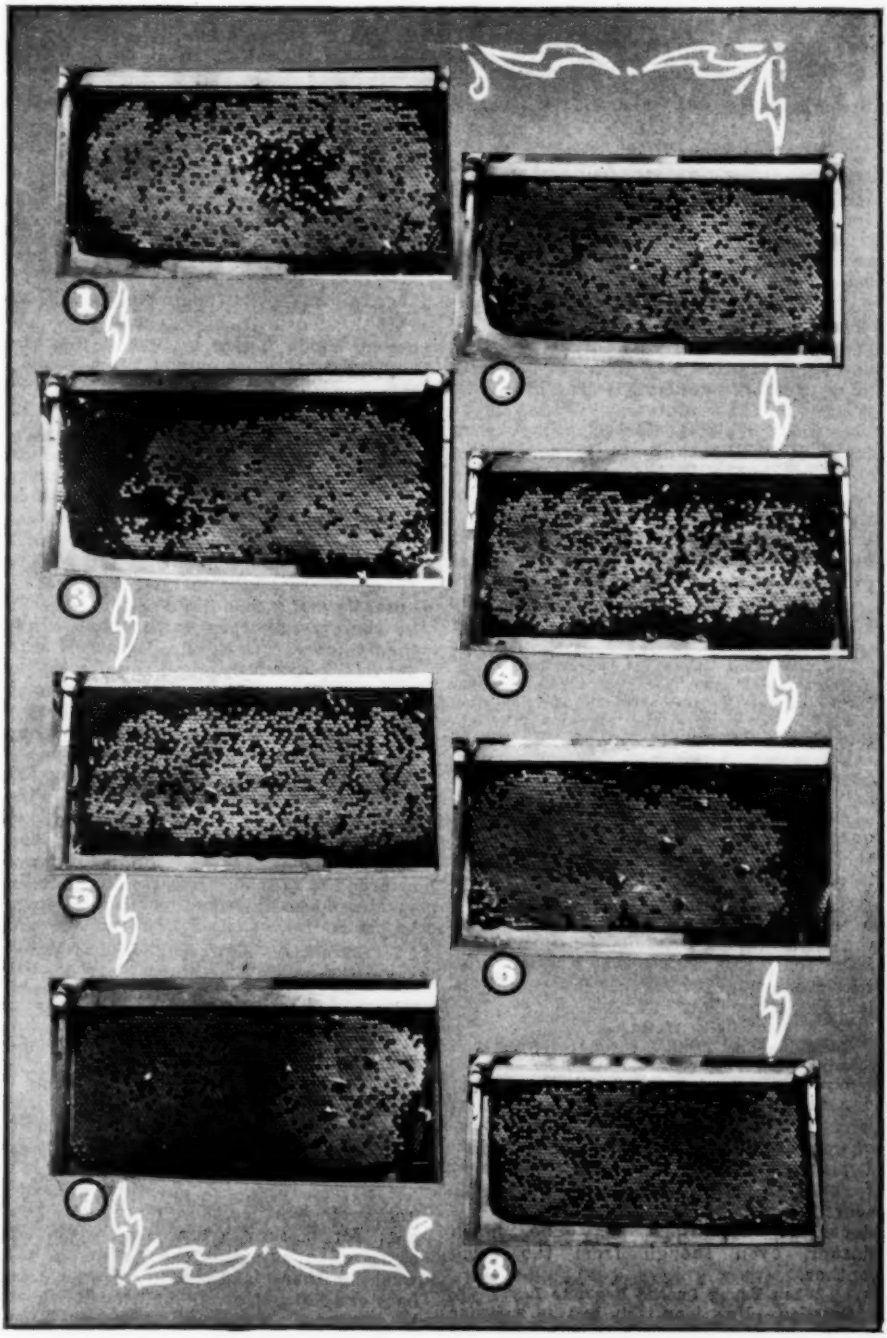
Port Dickinson, N. Y. G. Gilbert.

Beekeeping in Western Canada. During the last ten years, a great progress has been made in the development of beekeeping in the three western provinces of Canada, and especially in Manitoba, which province alone produced during 1923 3,041,712 pounds of honey, and increased from 19,416 colonies spring count to 28,152. The average production in Manitoba per colony was 156 pounds. The importation of pound packages of bees from the United States into the Province of Manitoba during the season of 1923 was over 3000 packages. The importation of pound packages during the season of 1924 will be still greater. In western Canada one will find beekeepers of different nationalities. A great number of these beekeepers are Ukrainians who have established their homes in these prairie provinces. Some of them still manage their bees by the old way which they learned in Europe. Some of them are good practical beekeepers and have accepted the new methods. Some of them are using both methods. In the summer they use Langstroth hives, and in the winter Ukrainian hives. In these Ukrainian double-walled hives the bees winter a great deal better than in single-walled hives. The merit of this hive is that it is dry and keeps a constant temperature during the winter.

Winnipeg, Man. Nicholas Pankiw.



The combs containing healthy brood shown on the opposite page were all fully rotten with American foul brood as the one illustrated above. These were the worst combs obtainable. They were disinfected in the Hutzelman solution and given to the bees with the results shown next page.



These combs were rotten with American foul brood last summer, being the worst to be found out of hundreds of diseased combs and fully as bad as the one illustrated on the preceding page. They were sterilized in the Hutzelman solution during the winter and inserted in the middle of the brood-chambers of strong colonies early this spring. Not a single cell of disease has been found in them this season. The scales have all been removed by the bees and they are now well filled with healthy brood.

XUM

GLEANED BY ASKING

Geo. S. Demuth

Hiving a Swarm with an Already Established Colony.

Question.—Is it possible to hive a new swarm having a queen in a hive containing a colony which was recently transferred and divided? David H. Schmoyer.

Pennsylvania.

Answer.—Under some conditions a swarm can be hived in with an already established colony without the bees fighting, but it is not always safe to depend upon this, for under other conditions the bees kill each other in great numbers. A safer way to unite a swarm with another colony is to hive the swarm in the usual way in an empty hive placed close beside the colony with which it is to be united. Later the two colonies can be united without fighting by the newspaper plan. Simply take the cover off from one hive and spread over the tops of the frames a sheet of newspaper having a few pin holes punched in it, then set the other hive (without bottom) on top so that the two colonies will unite after gnawing away the paper.

Introducing Queens at the Entrance.

Question.—I have been introducing queens by taking out the perforated tin and inserting a stick, then pushing the cage into the entrance with the wire side up. Is this method new? If not, does it meet with the approval of larger beekeepers? C. L. Justi.

Virginia.

Answer.—This plan of introducing queens was used to a large extent by the late Dr. Miller. It works well when introducing queens into full colonies when the weather is warm and has the advantage of making it unnecessary to open the hive to find when the queen has been released. The method deserves a wider use by extensive beekeepers than it has at present.

Color of Queens.

Question.—Are Italian queens ever dark in color or are these dark queens hybrids?

Wyoming. W. F. Hamilton.

Answer.—The color of Italian queens may vary considerably. The yellowest queens are those which are reared during warm weather and under the most favorable conditions, while queens reared during cold weather or under unfavorable conditions may be much darker, even though from the same mother.

When Young Queens Begin to Lay.

Question.—How long is it best to wait for a virgin queen to commence laying? I had one this spring that remained in the hive a month and did not lay, so I finally killed her.

Alabama. J. A. Dennis.

Answer.—Young queens usually begin to lay when eight or ten days old, but during a spell of bad weather mating may be delayed so that the young queens do not begin to lay for three weeks or more after birth. As a rule queens that do not lay at the age of 20 days should be destroyed, provided the weather conditions have been right for mating and drones are plentiful. However, queens reared very late in the fall may not begin to lay to any extent until the next spring.

Several Virgin Queens in Hive at One Time.

Question.—I found several virgin queens in one of my hives. Why should these virgin queens live peacefully together in the same brood nest when their appearance and activity indicated that they were several hours old?

Connecticut. A. H. Barber.

Answer.—Virgin queens do not attack and kill each other immediately upon emerging, but will sometimes remain without fighting for several hours after emerging. Usually after the first of the young queens has emerged the bees apparently hold the others prisoners within their cells or in some way prevent them from emerging, unless further swarming has been given up. It is possible that all but one of these seven virgin queens had been held prisoners in their cells until the hive was opened which disturbance caused the bees to cease their guard, thus permitting the other young queens to emerge which they will do immediately under these circumstances. These queens that have been waiting for an opportunity to emerge have the appearance of being several hours old when they crawl out of the cells.

Disinfecting Extracting Equipment.

Question.—What is the best way to disinfect the extractor, uncapping-can, wax-press and honey-tank that have been used in extracting honey contaminated with American foul brood? W. C. Phelps.

Wyoming.

Answer.—The most important thing in cleaning these utensils is to wash them thoroughly to be sure that every particle of honey has been removed. This can best be done by using hot water. It is not necessary to use chemical disinfectants or to sterilize these utensils by heating; for if they are washed absolutely clean of honey and the water used in washing them is disposed of where the bees can not get at it, the utensils should be rendered safe for further use. Where an extractor has been used in extracting brood combs containing American foul brood preparatory to disinfecting them with the Hutzelman solution, the extractor will be disinfected when the so-

lution is extracted from the combs after they have been in the solution 48 hours, but, of course, should be thoroughly washed afterwards.

Effect of Age of Queen Upon Swarming.

Question.—Is a queen more liable to swarm in her second year than in the first year of her life? A. K. Reed.
Missouri.

Answer.—As a rule, colonies having queens in their second year are more liable to swarm than those having queens in their first year. However, the condition of the colony has more to do with bringing on swarming than does the age of the queen. A young queen reared in this hive this season after beginning to lay almost never swarms during the first season, but a young queen introduced into a colony after the old queen has been killed may swarm within a few weeks after being introduced. The difference in these cases is explained by the difference in the condition of the colony. If the old queen is killed, the colony left queenless for ten days, all queen-cells destroyed before any can mature and a young queen introduced after an interval of ten days or more of queenlessness, the colony so treated almost never attempts again to swarm during the same season. The interval of queenlessness brings about a condition under which the bees are satisfied to go through the season without swarming. In the case of old queens that are beginning to fail, colonies may build queen-cells to supersede the old queen, then take a notion to swarm if this supersedure takes place during the swarming season. This explains some of the greater tendency to swarm with colonies having old queens. Again, it has been conclusively demonstrated that it is often more difficult to prevent swarming in colonies of medium strength than in booming strong colonies. It follows, therefore, that colonies having young and vigorous queens which become abundantly strong early in the season are easier to carry through the season without swarming than colonies having less vigorous queens which reach only medium strength during the building-up period in the spring. Such colonies often crowd the brood-chamber with honey, thus bringing about a congestion within the brood-nest which brings on swarming.

Making Increase at Close of Honey Flow.

Question.—Our honey flow is over the latter part of June or the first of July. Could I make increase profitably at that time?
Tennessee. John W. Taylor.

Answer.—Yes. If you have no fall honey flow and desire to make increase, at the close of the honey flow is a good time to do it. Colonies are usually abundantly strong at this time and the workers that are present in July are neither useful as honey-gatherers nor for winter bees. This particular generation of bees is therefore of no use to the beekeeper except to tide the colony over mid-summer and rear young bees for the winter cluster. There are enough bees in any strong colony at this time to make two or three good colonies. It must be remembered, however, that in locations where there is no fall honey flow, a large amount of honey must be left with each division. It is not possible to make increase entirely without cost even when made of bees that are not necessary to the existence of the colony, for the winter and spring stores for two colonies must be provided instead of for one. Where there is a fall honey flow each division may secure enough honey for winter and spring use, but unless a fall honey flow can be depended upon, each division should be left with from 40 to 50 pounds of honey.

Long-tongued Bees for Red Clover.

Question.—Are there not what are called long-tongued Italian bees especially bred for working on red clover? We have a lot of red clover growing here. F. Conzelman.
Illinois.

Answer.—There is a difference in the length of the tongue of different strains of Italian bees and no doubt the longer-tongued strain are able to secure more nectar from red clover than those having shorter tongues. Some seasons almost any good strain of Italian bees gather considerable from red clover, possibly because of shorter tubes in the clover blossoms or because of more abundant nectar secretion making the nectar stand higher in the tubes which would permit the bees to reach a portion of it.

Queen Crowded by Honey.

Question.—I notice that my bees fill up the brood-chamber very soon in the season with honey and the queen does not have enough room. Later, say in August, I notice that the colonies are not as strog as they should be. Is this condition the fault of the queen?
South Dakota. W. S. Chapman.

Answer.—It is normal for queens to reduce their egg-laying after they reach their peak in brood-rearing in the spring. As the queen reduces her egg-laying the bees will crowd honey into the brood-chamber especially if comb honey is being produced. This is not the fault of the queen, as a rule, although, of course, the decline in brood-rearing is more marked with old queens than with young ones. In localities like yours where the honey flow continues for a long period after the peak of brood-rearing this condition may result in considerable loss unless you requeen your colonies every year. Italian bees are more inclined to reduce brood-rearing as the season advances than some other races. In some localities where the honey flow continues

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until late or where there is a series of honey flows with intervals of dearth between, it may be more profitable to use Carniolans than Italians, for they continue brood-rearing out of season more extensively than do Italians. On the other hand, in many localities beekeepers prefer to have brood-rearing reduced in July to prevent having so many boarders during the usual dearth of nectar in August. Here the habit of Italians in reducing brood-rearing as the season advances is an advantage.

Bees Do Not Sleep.

Question.—Is it true, as stated by Maeterlinck, that bees never sleep?

New York. F. B. Atkinson.

Answer.—During the active season when bees are busy gathering nectar from the field, the activities of the hive go on day and night. Comb building, the evaporation of the thin nectar, the feeding of the young, the ventilation of the hive as well as many other activities must go on in the night if the colony is to prosper. In this sense the colony never sleeps, but in another sense, individual bees do rest at short intervals suggesting to the observer a little nap. Whether this is real sleep or not is not known. During the winter and at other times when nectar is not available from the field, bees remain quiet in order to conserve their energy. This quiescence may be something akin to sleep although the bees are easily aroused to activity. In the winter cluster each vacant cell within the cluster is occupied by a bee which is so quiet in its little berth that this may be considered sleeping.

Quality of Unsealed Honey.

Question.—When bees leave some of the honey uncapped for weeks does this uncapped honey have the same flavor and density as the capped honey? L. M. Brown.

Washington.

Answer.—Bees sometimes leave portions of the combs of honey uncapped even after it is well ripened. Usually honey is considered to be ripe when from two-thirds to three-fourths of the comb is capped over. If honey is still coming in from the field, of course the unsealed portion is not yet ripened and should be left longer. At the close of the season the last-gathered honey is usually not capped even if left for some time. This honey is usually of poorer quality and lower density than that gathered earlier which was mostly sealed.

Transferring Queen-cells from one Hive to Another.

Question.—How can I transfer queen-cells to queenless colonies without the bees destroying the ones I give them?

Florida. George Buehl.

Answer.—Queen-cells can usually be safely transferred from one hive into another providing the colony to which the queen-cells are given is queenless and has already started queen-cells of its own. If, however, a queen is removed from a colony and a queen-cell given at once the bees will usually destroy the queen-cell. You can prevent this by using a protector such as the West queen-cell protector as sold by dealers in beekeepers' supplies, or you can make one out of wire cloth. It is usually best to wait at least 24 hours after removing the queen before giving a queen-cell in order that the colony may realize its queenless condition. If there is no honey flow at the time it is well to feed the nucleus or the colony when introducing queen-cells.

Requeening Without Dequeening.

Question.—If I introduce a ripe queen-cell one to three days before the queen is ready to emerge, the cell being in a spiral cell protector with the ends only exposed, will the new queen be accepted and the old queen disappear? If this will work out it is an easy way to requeen. Harry Cross.

California.

Answer.—If a ripe queen-cell is given to a colony that already has a queen, the young queen will be killed soon after she emerges even though the cell is put into a queen-cell protector. Under some conditions, however, the plan you suggest will result in the old queen being killed. This is especially true with colonies that are about to supersede their queen. The plan you mention has been tried in various ways during the past 50 years. Some one suggested that the sting of the old queen be clipped at the time her wings are clipped, then when she is to be superseded a young queen could be put into the hive since the old queen would not be able to sting her rival. This does not work out in practice probably because the worker bees take the matter in hand and kill the intruder instead of depending upon the queen to do this.

Why No Surplus Honey Was Secured.

Question.—Last year I got no honey at all from some of my colonies. I don't understand this, as my bees went through the winter well and after feeding early in the spring they had a good start. They have all sent out large swarms, some of which were lost after hiving them. A. M. Aiken.

Georgia.

Answer.—Your last sentence probably contains the answer to your question. As a rule, when colonies swarm during the main honey flow and the swarms are hived in a separate hive, thus dividing the colonies into two or more parts, but little if any surplus honey is secured. This loss brought about by swarming can be prevented by hiving the swarms in a new hive placed on the old stand, the parent colony having been set to one side as described in the June issue under "Talks to Beginners."

TALKS TO BEGINNERS

Geo. S. Demuth

July brings to the beginner several new problems in the care of his bees. In some portions of the country most of the season's crop of honey is gathered and stored during this month, while in other portions the honey harvest is over early in the month and the surplus is taken off the hive during the month. In the northeastern portion of the United States where white clover and alsike clover are the chief sources of nectar the honey flow usually closes during this month. If the weather becomes hot and dry the honey flow closes earlier, but if there are frequent rains the clover bloom is sometimes prolonged until late in the month. In the sweet-clover region the honey flow usually continues throughout the month. For any given locality the closing of the honey flow may vary as much as a month and it is important for the beekeeper to watch the progress of the flowers furnishing the nectar in order to plan for the closing of the honey flow.

Sometimes the honey flow closes abruptly, without warning, giving the bees a poor chance to finish their work in the super, while other times the honey flow tapers off gradually toward the end, the bees bringing in less and less nectar each day, thus giving both bees and beekeeper an opportunity to arrange their work so there will not be a lot of unfinished super work when the season closes.

In some localities, especially in the far north, there comes a fall honey flow at about the time the early honey flow ceases, thus giving a continuous honey flow throughout the summer. This is also true to some extent in those localities where sweet clover furnishes most of the nectar. In most localities having a fall honey flow there is an interval of several weeks between, the early honey flow closing some time in July and the fall honey flow beginning in August. However, throughout the greater portion of the United States there is no dependable fall honey flow. This means that the end of the season so far as surplus honey is concerned comes this month throughout the greater portion of the country. During wet summers and especially along river bottoms, or in regions where there are many small lakes, thus favoring the growth of fall honey plants, the bees often gather considerable nectar later in the season; but except in a few localities this can not be depended upon year after year. In the buckwheat region of New York and Pennsylvania and in certain restricted areas in river-bottom lands, the main honey flow comes in August and September. As a rule, however, those localities which furnish a copious honey flow in June and July do not have dependable fall honey flows. The beginner who is not yet familiar with his locality should therefore prepare for the closing of the honey flow this month.

How to Tell When the Honey Flow is Closing.

By watching the progress of the flowers that are furnishing the nectar it is usually possible to tell when they will quit blooming, although sometimes a good shower will revive white clover so that it takes a new start and furnishes nectar longer than expected. One of the first indications of the close of the honey flow that can be seen in the hive is the tendency of the bees to begin crowding more honey into the brood-chamber and less in the supers. The honey is crowded into the upper portion of the brood-combs when the young bees emerge from the cells, thus limiting the egg laying of the queen. This is especially true if comb honey is being produced.

Another indication of the closing of the season is the way the workers begin to treat the drones. Usually before the supply of nectar fails entirely the workers begin to eliminate the drones. Often a worker may be seen struggling with a drone, apparently trying to lead him out of the hive, and in many cases the drones are crowded down to the floor of the hive or out at the entrance.

As the nectar supply decreases the bees begin to gather more propolis (the gummy substance used in closing the cracks between hive parts). This is especially noticeable when the bees begin to varnish over the new white cappings of the honey with this material.

Still another indication of the closing of the honey flow is an increased tendency of the bees to sting, although as the season advances this tendency apparently naturally increases even when nectar is still abundant. When the honey flow closes abruptly the beginner should be careful in handling the bees, for they sometimes become extremely cross when no nectar is to be had and nearly all of the bees are at home. Often the beginner, being accustomed to the bees being gentle during the honey flow, is severely stung if he attempts to handle the bees at the close of the honey flow unless great care is taken at this time. Those who have learned to handle their bees without a veil during the honey flow should not think of doing this at the ap-

proach of a dearth of nectar. No work should be done with the bees when they are not gathering nectar freely that is not absolutely necessary; for handling bees during a dearth of nectar is anything but pleasant.

As a rule, the swarming season is over some time this month even in the North. Under some conditions some colonies will swarm or attempt to swarm almost up to the close of the honey flow, but swarming is usually given up some time before the honey flow actually closes, and often during the height of the honey flow. In localities having fall honey flows there may be some swarming in August, or even in September, but the tendency to swarm during a fall honey flow is not great. Those who have been staying at home to watch for swarms need not do so as a rule after the middle of July in the North and much earlier in the South.

Management of Supers as Close of Season Approaches.

As long as honey is coming in rapidly and the flowers still hold out promise for a continuation of nectar secretion supers should be given as fast as needed as described last month. The rule as to placing the new super under the partly finished one or on top as given last month should be followed until there is evidence that the season is closing. Then the new supers, if given, should be placed on top of the others so that the bees can store in it if it is needed. When it is placed on top, work in the other supers is not neglected to start work in the new super as is usually the case when it is placed below.

If extracted honey is being produced and the colonies are quite strong, giving too much room at the close of the season does no particular harm, although it is better to have the entire crop of honey concentrated in a few supers rather than scattered through many.

In comb-honey production great care is necessary in having the greatest possible number of sections of comb honey finished and sealed. The thing to keep in mind as the close of the season approaches is to have the super work concentrated instead of expanding the super room rapidly as during the forepart of the honey flow.

Comb-honey supers should be taken off promptly as soon as most of the sections are finished. One can tell by looking in at the top if the honey is sealed in the upper portion of the sections, but often the honey is sealed in the upper portion and not in the lower, so it may be necessary to raise the super and look in from below to see if the honey is sealed in the lower portion. It is not often advisable to leave the comb-honey supers on the hive until every section has been finished, for, unless the season is unusually good, before the sections in the corner are finished, those in the middle of the super will have the cappings somewhat darkened. Comb honey has the finest appearance just when it is finished, and the sooner it is taken off from the hive after it is sealed the better so far as its appearance is concerned. This discoloration of the cappings becomes more pronounced as the honey flow tapers off toward its close As a rule, it does not pay to take out only a few sections at a time, but it is better to wait until most of the sections are finished.

Sorting Out Unfinished Honey.

When the supers of nearly finished sections are taken off, the unfinished sections should be sorted out to give back to the bees to be finished. For instance, if a colony has three or four comb-honey supers well advanced and one in which work has been recently started there may be enough unfinished sections in the three or four advanced supers to fill one super. In such cases these supers should be taken off, the honey sorted and the unfinished sections assembled in one super. This super of nearly finished sections should be put back directly on top of the brood-chamber if the honey flow is near its close in order to have the sections finished promptly. This reduces the number of supers to two, one being fairly well filled but not finished and the other having work just started in the sections. By placing the one in which work has recently been started on top the bees sometimes take out some of the unsealed honey in this upper super to fill up and complete the sections in the lower one.

As a rule, there will not be enough nearly finished sections on each hive to fill one super; but if there are several colonies the unfinished sections from all of them can be assembled and can be given to the colony or colonies doing the best work at finishing honey. There is a great difference in the way different colonies finish honey at the close of the season, and it is well to take advantage of this fact by having the last finishing done by the best finishers.

As soon as the bees cease storing honey, or better, just a little before and if possible before they begin to discolor the cappings and the wood of the sections, all of the comb-honey supers should be taken off whether finished or not. The lighter unfinished sections can be saved to feed the bees later. The heaviest ones of these may be used on the table or sold locally. In many cases beginners leave the unfinished sections on the hive hop-

ing that they will be filled later only to have the sections spoiled with propolis. It is much better to compel the bees to store the last few pounds of honey in the brood combs rather than leave sections on the hive too long and have them spoiled for further use.

How to Take Away the Honey.

The easiest way to take off finished supers of honey is by means of the bee-escape. This little device is fitted into a hole in a bee-escape board which is exactly the same as the inner cover used on hives having the double cover. The bee-escape board with the bee-escape in place is simply slipped under the super to be taken off, which separates the super from the rest of the hive. The bees on discovering that they are in prison will pass through the bee-escape which permits them to go down, but prevents any bees coming back. In 12 to 24 hours the supers are usually cleaned of bees in this way. Care should be taken that no cracks or openings are left anywhere to which bees might gain access to the super, for when the bees desert the honey, robbers will get in if they can find an opening large enough to squeeze through.

Honey can be taken off without the bee-escape during a good honey flow, but the bee-escape is especially advantageous in taking off the honey at the close of the season. In taking off comb-honey supers without the bee-escape most of the bees should be smoked out of the super. To get most of the bees out of the super a good bee-brush is almost a necessity. If none is at hand a large wing feather of a turkey can be used for brushing. As the cover is lifted the bees should be started on the move downward at once with smoke and kept on the go until most of them are out of the supers. If they are permitted to stop on the way they will fill themselves with honey; and when the bees get their heads into cells of honey they refuse to move even when smoked vigorously. Besides this if they are not kept on the move they will bite open some of the cappings thus spoiling the appearance of the sections of honey. When the cover is first lifted the bees on top of the sections can be brushed off, brushing them over the edge of the super. This is done at the same time that smoke is sent down between the sections.

While the bees are being driven down, the super should be pried loose but not lifted until most of the bees have gone out. Then one end of the super should be lifted quickly and brought up almost standing on end; and before the bees on the lower side of the super can go back in they should be brushed off with the bee brush or feather. All this must be done quickly or some of the bees will go back. The super is then ready to be carried into the shop or honey-house and stood on end before a window so that the bees will leave it and fly to the light. Later the window can be opened to permit these bees to escape. Great care should be taken to keep the honey where robber bees can not get at it for they would soon carry the honey back to the hive.

When taking off extracting supers, this can be done either by the means of a bee-escape or by driving most of the bees down as when taking off comb honey, then taking out the frames one at a time and shaking and brushing the bees off, finally setting the comb into an empty super kept well covered with a piece of canvas.

How to Detect Robber Bees.

As the close of the honey flow approaches bees become inclined to rob; and just after the honey flow has closed is usually the worst time for robbing. At this time the beginner should be extremely careful not to expose any honey where robber bees can get at it, for this stirs up great excitement and sometimes results in weaker colonies being attacked and destroyed by robbers.

Robber bees can be detected by their stealthy manner. They are inclined to collect around the edges of the hive cover or between the brood-chamber and super after the hive has been opened. When bees are seen doing this it is time to quit work among them or to exercise great precaution; for if a hive is opened and the combs exposed, robber bees may get such a start before the colony can reorganize its defense that many bees are killed and the colony greatly injured in the fight. Robber bees usually do not alight at the entrance and go directly into the hive but dart about before alighting, watching for an opportunity to slip between the guards. When they do alight at the entrance they do this in a nervous manner, thus betraying themselves to the guards. If the defense of a colony is broken down by overwhelming numbers of robbers, the robbers then enter the hive boldly and carry away honey rapidly. In doing this as the laden robbers come out with the stolen honey they are usually so heavily laden that they run up on the front of the hive before attempting to take wing. This is characteristic of robbing bees, and helps to distinguish them from the commotion often seen early in the afternoon when young bees take their play flight.

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JUST NEWS
Editors

The sixth annual summer meeting of the Michigan Beekeepers' Association will be held at Traverse City, Michigan, August 6 and 7. Arrangements have also been made for a field meeting at the apiary of Frank Abbott, Palms, Michigan, on July 23, and at the apiary of Earl Kellar, Medina, Michigan, on July 25. A large attendance is expected at each of these meetings.

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Prof. R. B. Willson will give his next radio talk on honey from Station WGY, Schenectady, N. Y., on July 7. The exact hour for this talk is not yet announced, but will be published in the radio program in the newspapers.

* * *

The annual summer field meeting of the Ohio Beekeepers' Association will be held Friday, August 1, at the Hartman Farm—"the land flowing with milk and honey." From the Hartman farm comes some of the finest milk produced in Ohio. The apiary is one of a chain located around Columbus and operated by the Benninghof Farms. The farm is easily reached by electric car or by automobile, being located three miles north of the corporation limits on the Chillicothe Pike. Demonstrations and old-fashioned talkfests will fill up the day. Geo. S. Demuth will be present and will take part in the program.

* * *

The Rural New-Yorker of May 3 contains a warning regarding the shipping of honey to Walter C. Morris, 105 Hudson St., New York City, saying that they have four open claims amounting to a considerable sum for honey which was sent to Morris upon consignment and which he sold but for which he made no returns to shippers.

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On our "Who's Who in Apiculture" published in the May issue, the name of R. H. Kelty appeared as State Inspector for Michigan through some inexplainable error in making up the table. B. F. Kindig, Lansing, Michigan, is Inspector of Apiaries instead of R. H. Kelty, Mr. Kelty being secretary of the state association. Other corrections in this table should be made as follows: The secretary of the Wyoming Beekeepers' Association is C. L. Corkins, University of Wyoming, Laramie, Wyoming. Also in Wyoming beekeeping is taught in the Agricultural College, and the shipment into the state of bees on combs is prohibited except where permission is granted by the State Apiary Inspector. Also the State Inspector of Mississippi is J. L. E. Lauderdale, Leland, Miss.

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The report of the Dominion Apiarist, C. B. Gooderham, B.S.A., of the Department of Agriculture of Canada for 1923, has been published in bulletin form. This bulletin contains an unusual amount of practical material and should be in the possession of every beekeeper in Canada. We are not informed as to conditions under which beekeepers in this country can secure this bulletin, but suggest that they write to C. B. Gooderham, Dominion Apiarist, Ottawa, Ont., Canada.

* * *

The U. S. Department of Agriculture reports the winter loss for the winter of 1923 and 1924 for the United States as 11.8 per cent, which is exactly the average for the last ten years. The number of working colonies on May 1 is estimated as 94.2 per cent of the number a year ago. The condition of the colonies is estimated at 86.7 per cent for May 1, 1924, as compared with 92 per cent for the ten-year average, and the condition of the honey plants is estimated at 85.4 as against 89.9 per cent for the ten-year average.

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The Mid-West Horticultural Exposition to be held at Waterloo, Iowa, next fall will have a large premium list for the bee and honey exhibits. Prof. F. B. Paddock, Ames, Iowa, is superintendent of the Apiary Department. Applications for space should be sent to Prof. Paddock.

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The Extension Service of the State of Ohio is arranging for demonstrations in disinfecting diseased combs with the Hutzelman Solution. Arrangements are being made by which the diseased combs can be transported to some central point where the demonstration is to be held.

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"Beekeeping in Ohio" is the title of a new bulletin put out by the Agricultural College Extension Service of the Ohio State University. This is adapted from "Beekeeping in Oregon" by H. A. Scullen, but modified to meet Ohio conditions by Miss Florence Naile, Secretary of the Ohio Beekeepers' Association.

* * *

E. J. Ladd, well known to beekeepers of the northwest, died on April 17 after a brief illness. Our older readers will remember Mr. Ladd as a correspondent for Gleanings for many years.

A. I. Root's Story of His Own Life

Ye shall do no unrighteousness in judgment, in meteyard, in weight, or in measure. Just balances, just weights, a just ephah, and a just hin, shall ye have.—Leviticus 19:35, 36.

In 1873, when the April number of the American Bee Journal came out, I was glad to find an advertisement of dollar hives. At this time I hoped that more manufacturers of dollar hives would follow in my tracks, but I also hoped that they would not meet with the abuse I had received in breaking the first furrow in that direction.

So far as stirring up trouble is concerned I went on record in the May number of the American Bee Journal, 1873, as agreeing to overhaul all articles written with motives of profit by patentees of hives, and I agreed to accept the abuse that followed as a matter of course. When patent rights should be dropped and the attention of the patentees turned toward making good hives at a fair price (and this result seemed even then dawning), I agreed to be ready to drop personalities, having accomplished all that I desired.

In the July number of the American Bee Journal for 1873 a writer mentioned those whom "Novice has so mercilessly punched." Now my friend was in error for I did not punch any one, or at least did not mean to, but I hope I punched their claims hard and full of holes too, when they were gross exaggerations. For instance, when some one in order to sell rights led beginners to expect that a hundred pounds of box honey or more might be obtained per hive on an average, I undertook to remonstrate with all my power.

One of the most lamentable wrongs in bee culture was the custom of taking money for a right to make and use a hive, the "inventor" knowing that the buyer could make and use a hive so nearly like it as to answer every purpose without using a single one of the patented features. In starting Gleanings in Bee Culture it was one of my special aims to inform the public fully of all such transactions coming under my observation.

Selling Secrets.

Several irresponsible persons had advertisements inserted in some of the bee journals; and in one instance considerable sums of money were lost by beekeepers sending to them. When Gleanings was first started I positively refused to advertise any recipes or methods of doing desirable things in the apiary, for the first person sending the needed amount could if he chose then publish it to the world. I felt that information of all kinds should be free through the journal. Samples, models to work from, or implements themselves, of course, have a cash value but not secrets as a general rule.

A. T. Wright of Chicago sold a very small 25-cent pamphlet recommending his patent hive. He not only endorsed sugar syrup for wintering, but left me far in the shade in directing that it be fed the bees to produce nice box honey profitably. Nice-looking comb honey can be produced, it is true, as my experiments in feeding gave me ample proof; but in taste it is sugar syrup still, and worse still it costs $1.00 a pound or more.

In 1873 I received a circular telling how to make artificial honey, "Ambrosia honey," in every respect as good as that made by the bees. The recipe was copyrighted and secured according to law, and parties receiving it were cautioned not to sell or make known the recipe to others.

Now, if I hadn't a fondness for "good things" I don't know who had, and I sent a two-dollar bill for the recipe. I proposed to give the whole thing in the next number and take the consequences.

The recipe was as follows: Fifteen pounds of white sugar, four pounds soft water, one-half teaspoonful tartaric acid, one teaspoonful of salt, four drops of oil of peppermint, one drop of oil of rose, one ounce of gum arabic dissolved in half a pint of water. This was to be boiled and one and a half pints infusion of slippery elm added, then when nearly cold another pound of good honey was to be put in also. The originator claimed to have invented this during the winter of 1871, with the assistance of an expert (?) New York chemist at a cost of nearly $500. However, the recipe was really nothing more than a copy of an old honey recipe without a single addition or improvement. The whole thing appeared in Dr. Chase's recipe book published in 1867. I gave the recipe in Gleanings so the originator had good grounds for seeking legal redress if the

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law allowed any in such case.

I sent 10 cents to one H. Herman Flick for a beesting cure, guaranteed to cure without cost and with no more pain or swelling. The principal paragraph in the cure was as follows:

"How cured. In severe cases the person should drink freely of whisky or some strong alcoholic drink until he feels its effect. This will prevent all danger and further swelling." The saloons had just been closed in Medina or I feared there would have been a serious rush to the beehives for the sole purpose of being stung, if such treatment had been recommended.

Fraudulent Bee and Queen Breeders.

In the April number of Gleanings for 1874 I published a letter from a man who had sent $30.00 to Gray and Winder of Cincinnati for two imported Italian queens. They acknowledged the receipt of the order but failed to send the queen. They offered to make it right some time if the complainant would be quiet and gentlemanly about it, but in a letter to me at the time, Mr. Winder said if the transaction was published he would never pay it at all. As the $30.00 was probably lost, I felt that nothing would be gained by keeping quiet, so I went ahead and published the details in the November issue of 1874, for fear he might go ahead and get the hard-earned dollars from some one else.

Letters that I received from such delinquents came to be an old story, and I became so hardened that I did not mind it a bit when I was told that I was meddling, that my advice and assistance had not been asked. I was sometimes informed that great numbers of similar complaints had been made of me, but dropped out of kindness. Now this was "mistaken kindness" certainly, for if anyone had a complaint I wanted to know about it. I even agreed to print the complaint.

T. H. B. Woody of Manchester, Mo., was complained of early in 1874, and I wrote him, asking if he could give me any explanation. He replied at length that he had faithfully filled all orders with the exception of one, the writer of which had failed to give his address, and that he would be pleased to learn where he should send the money or the queen. In closing he called on God to witness the purity of all his motives and his intentions, and I might have thought him upright and honorable; but I wrote the complainant, that Mr. Woody had lost his address. The complainant in question considered this too big a joke altogether and forwarded me a mass of letters of apologies and excuses and attempted to lay the blame on other people. It seems to me it would have been worth full $12.00, the amount in question, to write all these letters. Woody first blamed some one else for having cheated him out of a larger amount, as if that excused him at all, and finally said he would return the money by postoffice order if the complainant would take the risk of having it sent back. Afterwards he wanted to know if he would not take pigs, as money was so hard to get. It looked as though it was hard to get in Texas also, where the complainant lived.

The matter of the business methods of H. A. Burch & Company occupied a large amount of space in Gleanings in 1881 and 1882. He was unable to make good his promises; and, finally feeling that the matter had gone far enough, I announced that I would make good all losses occasioned by his advertisement in Gleanings, and I announced in the August number, 1882, that I could not accept further advertising from him. I paid claims of $115.00, $14.00, $3.50, $35.00, $10.50, $50.00, $6.65, $11.50 and $12.00. The number of kind letters I received, however, gave me renewed faith in humanity.

In 1886 Mr. Thomas Horn, an advertiser of queens, accepted money for orders sent him and then refused to fill the orders or answer letters. A subscriber suggested that he was going to make a sight draft on Mr. Horn and tell him that if he did not pay his draft or send the bees he would report him to the postoffice authorities. I did not know then that under certain circumstances the United States postal authorities would refuse to deliver mail to parties when engaged in swindling operations, but it did not occur to me until after reading this letter that we could oblige men like Mr. Horn to give some sort of a civil reply to complaints by the plan suggested. I waited patiently for Mr. Horn, published his promises and kept back complaints by suggesting that he would fix everything in time, until I finally received the censure of many good men. Later, after becoming thoroughly convinced of this duplicity, I took a different line of action, and some of my readers thought I was beginning to be terribly severe. However, I wanted every man like Mr. Horn to know that he could not conduct business in this way and get off scott free, and that the way of the transgressor is hard. It seemed to me that it was my duty to help make it hard—so hard in fact that those who were tempted would conclude it would not pay, and give it up even before they started out.

Classified Advertisements

Notices will be inserted in these classified columns for 7c per word. You must say you want your advertisement in the classified columns or we will not be responsible for errors. For special conditions on bee and queen advertising please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy, if credit has not been established previously.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. F. Moore, Hoehn & Honigford, Dr C. G. Luft, J. D. Beals, David Running, A. V. Small, D. C. Gilham, O. S. Rexford, Sam Hinshaw, E. J. Beridon, Jr., C. A. Mayeux, White Clover Farm & Apiary, The Marugg Co., Mead Cycle Co., W. H. Laws, A. M. Moore, Barker Mfg. Co., E. A. Simmons, Majors Nordan, F. Coombs & Son, A. I. Root Co. of St. Paul, A. R. Irish, Diamond Match Co.

HONEY AND WAX FOR SALE.

FOR SALE—New clover comb honey in 1⅞ sections; 8 cases to carrier. I. J. Stringham, Glen Cove, N. Y.

FOR SALE—Buckwheat in 60-lb. cans, 8c; amber, 8½c; light amber, 9c. Roscoe F. Wixson, Dundee, N. Y.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Orange, saw palmetto and gallberry honey in new 60-lb. cans, two, $14.00. F. E. Munson, Arcadia, Fla.

FOR SALE—Clover, amber and buckwheat honey in 5-lb. pails and 60-lb. cans. C. J. Baldridge, Homestead Farms, Kendaia, N. Y.

FOR SALE—White clover honey in 14-oz. glass jars, 24 to the case, $5.00 per case, f. o. b. Geneseo. G. A. Bailey, Geneseo, N. Y.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gallon barrels. Samples and prices on request. A. I. Root Co., 16-18 Jay St., New York City.

HONEY for sale in 60-lb. tins. White-clover Indian crystallized, 13c per lb., L. A. West Indian honey liquid, 11c per lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—Comb and extracted white clover honey, extracted in 60-lb. cans, and 5 and 10 lb. pails. Prices given on request. Sample, 15c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Now booking orders for 1924 honey crop, delivery after August 1, white clover, two 60-lb. tins, $15.00. Light amber, $13.50. Old crop all sold. J. G. Burtis, Marietta, N. Y.

NEW crop extracted finest thick Florida white tupelo. Several tons in new barrels, thoroughly ripened on hives, guaranteed not to granulate or ferment. Sample 15c. M. L. Nisbet & Bro., Bainbridge, Ga.

HONEY AND WAX WANTED.

WANTED—Chunk honey in 5-lb. pails. J. E. Harris, Morristown, Tenn.

WANTED—Light comb honey; quote best price. 60-lb. cans for sale, 50c per case. M. V. Facey Honey Co., Preston, Minn.

WANTED—White clover and raspberry comb honey for resale. Highest fair market price paid. E. W. Peirce Co., 28 W. Main St., Zanesville, Ohio.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same. A. W. Smith, Birmingham, Mich.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

OLD COMBS WANTED — Our steam wax presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1924 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

WANTED—Comb honey in shallow extracting frames, also comb honey in pound sections and extracted honey. Good 60-lb. cans for sale at 50c per case, also good comb-honey cases, single and double tier with glass front at 25c each. John Schenk, 131 Peete St., Cincinnati, Ohio.

FOR SALE.

BEES AND HONEY—Editor, George W. York, Spokane, Wash. Sample free.

CLEAN used hives. Queen-mating hives. Inexpensive. Crichton, 47 Alma Ave., Waverley, Mass.

FOR SALE—200 standard size 10-frame hives, $1.50 each. L. F. Howden, Fillmore, N. Y.

HONEY LABELS for 1924. Catalog FREE. Liberty Pub. Co., Sta. D, Box 4065, Cleveland, Ohio.

CONNECTICUT and Rhode Island headquarters for Root's beekeepers' supplies. A. W. Yates, Hartford, Conn.

FOR SALE—Two-frame Cowan extractor, hives and supers, cheap. A. R. Smith, 3417 Oxford St., Des Moines, Iowa.

FOR SALE—Root four-frame power extractor, gasoline engine, pump and storage tanks. John C. Bull, Valparaiso, Ind.

FOR SALE—Good second-hand 60-lb. cans, two cans to case boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

ADAPTABLE BEEHIVES, single or double walled, are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

ATTRACTIVE LOW PRICES—Write us for list of odds and ends, shipping cases, hives, etc., first grade, priced to save you money. Dadant & Sons, Hamilton, Ill.

ROBINSON'S comb foundation will please the bees and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

SOUTHWESTERN distributors for Robinson's comb foundation. Cypress beehives, Italian queens. Our guarantee is not to be equaled. Send for price list. Holloway Bros., Marietta, Okla.

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HONEY-NUT CHOCOLATES. A new and delicious confection made of pure honey, nuts, fruits, etc., $1.00 lb., 50c ½ lb., postpaid. Wholesale prices on application. J. D. Kroha, 87 North St., Danbury, Conn.

SPECIAL PRICES—We are offering at specially low prices some very high-grade material in shipping cases, frames, hives and miscellaneous which represent items we no longer carry regularly in stock or which have to be closed out to make room for new stock specially equipped to take Dadant's Wired Foundation. If interested, write for list; we can save you money. Dadant & Sons, Hamilton, Ill.

WANTS AND EXCHANGES.

WANTED—Small honey extractor. C. B. Thwing, 45 W. Tulpehocken St., Philadelphia, Pa.

BEES AND QUEENS.

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or, it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

WHEN IT'S GOLDEN, IT'S PHELPS! C. W. Phelps & Son, Binghamton, N. Y.

BIG, bright Italian queens, 75c each, by return mail. P. B. Skinner, Greenville, Ala.

HIGH grade queens of quality, $1.00 each; $11.00 for 12. W. E. Buckner, Mt. Vernon, Ga.

HIGH-GRADE queens at utility prices. prices. Write for circular. R. V. Stearns, Brady, Texas.

QUEENS that are guaranteed for one year's service, $1.25 each. Holloway Bros. Apiaries, Marietta, Okla.

BEES for sale, 25 colonies, good hives. Guaranteed free from disease. W. B. Brorein, Wapakoneta, Ohio.

THREE-BANDED Italian queens, $1.25 each. $12.00 per dozen, after May 15. Curd Walker, Jellico, Tenn.

WANT bees and equipment for western Minnesota forty or Red River Valley quarter. A. M. Wise, Appleton, Minn.

$70.00 per 100 we are asking for our queens. Let our circular tell more about them. R. V. Stearns, Brady, Texas.

SIMMONS QUEENS and NUCLEI. Prompt shipment and satisfaction guaranteed. Fairmount Apiary, Livingston, N. Y.

FOR SALE—31 colonies of bees, ten-frame hives. Guaranteed free from disease, $6.50 each. L. P. Mills, Johnstown, N. Y.

GOLDEN Italian Queens bred by an experienced breeder, price 90c each; $9.00 per doz. Honoraville Bee Co., Honoraville, Ala.

FOR SALE—150 stands of bees and fixtures, clean bill of inspection. Honey flow now on. Walter Crockett, Middleton, Idaho.

FOR SALE—Three-banded, leather-colored queen bees. None better. Write for prices. M. Bates, Greenville, Ala., R. F. D. No. 4.

BRIGHT three-band Italian queens, $1.00; 6 or more, 75c. Write for quantity prices. Tupelo Apiaries, J. L. Morgan, Apalachicola, Fla.

BRIGHT Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Write for prices on package bees. T. J. Talley, Greenville, R. F. D. No. 3, Ala.

FOR SALE—Bright Italian queen, $1.00; 6, $5.00; 1-lb. package bees with queen, $3.00; 2-lb. package with queen, $4.50. Powell Owen, Greenville, Ala.

FOR SALE—Eight colonies of Italians, guaranteed free from disease. Many supplies and drawn combs. Write for details. Van Collins, Port Chester, N. Y.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1924, ready free. Dr. White Bee Co., Sandia, Texas.

ITALIAN QUEENS—Three-banded, bright and leather-colored. Satisfaction guaranteed. Write for prices, etc. A. T. Keil, Treesdale Farms, Mars, Butler County, Pa.

WARRANTED PURE MATED Italian queens, $1.25 each, mailed in special introducing cages that never fail. Sent by return mail. No honey used in candy. Daniel Danielsen, Brush, Colo.

GOLDEN ITALIAN queens for sale. 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R. D. 3, Ala.

ITALIAN QUEENS, 75c each; $8.50 per dozen. Pound of bees with queen, $2.75; two pounds of bees with queen, $4.50. We pay charges. Graydon Bros., Greenville, R. F. D. No. 4, Ala.

JUST BRING HONEY (J. B. Hollopeter) three-banded Italian queens produce bees bred for business. Untested each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00. Order early. Circular. J. B. Hollopeter, Rockton, Pa.

FOR SALE—Three-banded Italian bees and queens. Two-pound package bees with select untested queen, $4.25. One select untested queen, $1.00; one select tested queen, $1.50. J. Allen, Catherine, Alabama.

ITALIAN three-banded select untested queens for the rest of the season, $1.00 each; 6 for $5.00; 12 for $9.00. My queens will bring results. Try them while the price is low. H. S. Ostrander, Mellenville, N. Y.

GOLDEN Italian Queens for 1924, the big, bright, hustling kind. Satisfied customers all over the U. S. Untested, $1.00 each; 6 for $5.00; 12 for $10.00; $70.00 per 100; tested, $1.50. E. F. Day, Honoraville, Ala.

FOR SALE—Three-banded Italian queens. Untested, 1 to 11, $1.00 each; 12 to 49, 85c each; 50 to 100, 75c each; tested, $2.00 each. Satisfaction guaranteed. Ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

GOLDEN Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50; select tested, $2.50. No disease, good queens, safe arrival and satisfaction guaranteed. D. T. Gaster, R. F. D. No. 2, Randleman, N. C.

FOR SALE—Three-band Italian queens and bees for spring delivery. One 3-frame nucleus with one pound extra bees, with untested queen, for $5.00. Write for prices on larger quantities. No disease. Safe delivery and satisfaction guaranteed. J. E. Arthur, Register, Ga.

PRICES right. Pinard's queens and package bees. Quality, satisfaction guaranteed. Young, laying, untested queen, $1.25. Two-pound package bees, $3.50. For larger lots write. Circular free. A. J. Pinard, Morgan Hill, Calif.

THREE-BANDED bees and queens, government inspected, 2-lb. package with select queen, $5.00; select tested queens, $2.50; untested, $1.00 each or $10.00 per dozen. Carolina Bee Co., W. O. Curtis, Mgr., Rt. No. 1, Graham, N. C.

GOOD as the best, cheap as the rest. Three-band Italian queens by reutrn mail, $1.00 each; 12, $10.00. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

AGAIN our northern-bred leather-colored Italian bees have wintered fine, and we guarantee that no disease exists in our yards. Queens after June 15, $1.25 each; $12.00 per doz Charles Stewart, Johnstown N Y

FOR SALE—Rule Brothers Straight-Line three-banded Italian queens, satisfaction guaranteed. Untested, $1.00; 25 or more, 90c; tested, $2.00; 25 or more, $1.75. Rule Brothers, Terlton, R. F. D. No. 1, Box 30, Okla.

FOR SALE—Three-banded Italian queens and bees ready for June 5 delivery. Price, 1 untested queen, 85c; 100, $80.00. One 2-lb. package with queen, $3.00 each. Health certificate with each shipment. John St. Romain, Marksville, La.

FOR SALE—Golden Italian queens. Certificate of State Inspector with each shipment and safe arrival insured. If you haven't seen my prices in May Gleanings, drop me a card for price list Hazel V. Bonkemeyer, Randleman, R. F. D. No. 2, N. C.

QUEENS, QUEENS, BY RETURN MAIL. Three-banded, large, bright hustlers. Selected untested, 1, 80c; 12, $8.00; 100, $60.00; selected tested, 1, $1.25; 12, $12.00. No disease, ship only the best, good service and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

THREE-BANDED LIGHT-COLORED ONLY —One-frame nuclei with untested queen, $2.00 each. In lots of ten or more, $1.90 each; additional frame of brood or pound of bees, 60c extra to each package. The above is for immediate shipment. Central Louisiana Apiaries, Oscar Mayeux, Prop., Hamburg, La.

LATHAM'S "SHE-SUITS-ME" queens are three-banders of highest quality. Untested, in May, $2.00 per queen. After June 1, $1.00 per queen. Special price on 50 or more. Eastern beekeepers and Canadians will do well to try out my package bees and nuclei. Circular on request. Allen Latham, Norwichtown, Conn.

FORTY YEARS of SPECIAL BREEDING. Satisfied customers in all parts of the world is why we think PHELPS' GOLDEN QUEENS will please you. HARDY, PROLIFIC and GENTLE, $2.00 each for June delivery. July, $1.50 each; 6 for $8.00; dozen, $15.00. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

FOR SALE—Choice bright Italian queens. I have been building up this strain for the last 20 years for vigorous hustlers, good winterers, gentleness and fine color. These queens will equal the best on the market. Health certificate goes with queens. Prices: 1 untested queen, $1.25; 12 untested queens, $12.00; 1 breeder, $5.00. Emil W. Gutekunst, Colden, N. Y.

PACKAGE BEES and ITALIAN or CARNIOLAN QUEENS. I save you express charges on northern shipments from my yards near Redding, Cal. (most northern point in California where EARLY PACKAGE BEES and QUEENS can be reared). Eastern and northern shipments via Ogden, Utah, are shipped from San Jose. Untested queens, $1.00; bees, $1.50 per pound. Attractive prices on large order. J. E. Wing, San Jose, Calif.

A RECORD hard to beat. See our former advertisement. The largest hives are crowded and the smallest hives are jammed, but the bees that fill the supers are from the F. M. Russell strain. The bees that won the world's record were on a Russell frame. If you wish to get the honey you should have both Russell's queens and frame. Untested, $1.00 each; 2 for $1.50; $10.00 per dozen; $75.00 per 100. F. M. Russell Co., Roxbury, Ohio.

ITALIAN QUEENS, THE QUALITY KIND. Three-bands or Goldens. One, 80c; six, $4.50; dozen, $8.50; virgins, 30c; tested, $1.50. FALL REQUEENING WILL REDUCE WINTER LOSS AND INSURE A CROP FOR NEXT SEASON. Satisfied customers everywhere. Complete satisfaction guaranteed. Crenshaw County Apiary, Rutledge, Ala.

PACKAGE BEES FOR 1924—Yancey hustlers; they get the honey. Three-band strain only. Now booking orders for spring delivery. Place your order early and make sure of shipping date; 10 per cent will book your orders. We do not book more orders than we can fill promptly. Safe arrival and satisfaction guaranteed on every package and queen shipped. Caney Valley Apiaries, Yancey Bros., owners, Bay City, Texas.

THE WONDER QUEENS. We are now in position to ship queens from our high-producing mothers by return mail at the following prices: 1 untested, $1.50; 12, $16.00; tested, $2.25. We are also breeding from other stock at these prices: 1 untested, $1.00; 12, $10.00; tested, $1.75. No disease. Safe arrival and satisfaction guaranteed. Write for circular and complete price list, also prices on quantities. The steadily increasing demand for our queens is proof of their superior quality. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

HELP WANTED.

WANTED—Man with some experience to work bees, season 1924. State age, experience and wages, also give references. We also can furnish bees on shares. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

MISCELLANEOUS.

THE BEE WORLD—The leading bee journal in Britain and the only international bee-review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a postcard today. It is well worth your little trouble.

A BARGAIN IN HONEY CONTAINERS.

We have an overstock of cans and pails in cases suitable for reshipping when filled with honey. We offer these for a limited time only at the following special prices:

Box of 24 2½-lb. friction-top cans at $1.15; 10 for $11.00.

Box of 12 5-lb. friction-top pails at 95c; 10 for $9.00.

Box of 6 10-lb. friction-top pails at 80c; 10 for $7.50.

Box of 12 ½-gallon oblong cans with 1¾-inch screw, $1.85; 10 for $17.50.

Box of 6 1-gallon oblong cans with 1¾-inch screw, $1.35; 10 for $12.50.

Box of 10 1-gallon oblong cans with 1¾-inch screw, $2.10; 10 for $20.00.

This is bright new stock offered right down to cost and a bargain to those who use such packages. Order while the stock and prices are available.

6½-oz. honey tumblers, 40 doz. to barrel, including tin caps and wax paper liners, $9.60 per barrel for the few barrels which remain.

THE A. I. ROOT COMPANY,
West Side Station, Medina, Ohio.

XUM

Queens

"The Best I Know How to Produce."

Queen rearing is now in full blast with us and at present the weather and honey flow are co-operating with us to produce quality and quantity of queens. Remember we guarantee every queen to be first-class in every respect and leave that to your judgment. We have several thousands of pleased customers and if you have never purchased queens from us, it will be to your advantage to get the habit. A card will bring our literature.

Queen Prices for the Remainder of the Season.

1 to 4....$1.50 each
5 to 9.... 1.45 each
10 or more 1.40 each
In lots of 100.. ..... 1.20 each

Breeding Queens, service guaranteed for the season, $10 each.

JAY SMITH

ROUTE 3. VINCENNES, IND.

QUEENS! QUEENS!

BY RETURN MAIL

Three-Banded Italians Only

After 28 years of select breeding our strain of three-band bees continue to excel for gentleness, disease-resisting qualities and honey production. These queens are reared by Berry in person and are truly "Berry Queens." "'Nough said."

Untested Select Queens, $1.00 each, 12 up, 75c each.

Tested Select Queens, $2.00 each; 12 up, $1.50 each.

On large lots of queens write for prices. We guarantee our queens to reach you in perfect condition and to give entire satisfaction. Otherwise we will replace free of charge or return your money, as you may prefer. Wings of queens clipped free of charge. Descriptive price list for the asking.

M. C. BERRY & CO.

BOX 697, MONTGOMERY, ALA.

What a Whale of a Difference Just a Few Cents Make!!!

Good queens are absolutely necessary if you are to succeed with bees. The price of a cheap queen plus the price of a pound or two of honey brings one of our dependable queens that may mean many extra pounds of honey for you. Every queen laying and laying well before mailing.

Untested three-banded queens after July 1: One $1.25; six, $7.00; dozen, $13.00.

Orders booked now; no deposit required.

THE SCOTT APIARIES, LA GRANGE, IND.

"The World is Our Market"

Benninghof Farm Queens

PRODUCTION, GENTLENESS, COLOR

For the first time in 1923 we brought to the attention of the American beekeepers our strain of Italian Bees, which we had been perfecting for the previous 20 years, to secure a race of bees superior to any that could be purchased.

In order that the beekeepers of the country might share in the advantages of these superior bees we offered for sale to interested parties a limited number of these excellent queens.

The results last season were so highly satisfactory to our customers that we again place before the discriminating beekeeping public our superior queens.

	1	6	12
UNTESTED	$1.50	$ 8.00	$15.00
TESTED	2.50	13.00	25.00

For fall requeening in 100 lots on application.

BENNINGHOF FARM, STATION F, COLUMBUS, OHIO

Honey for Sale---Case or Carlot

Ohio Valley Queens

For Quality
For Service

Your colonies headed with an Ohio Valley queen now will mean your supers full of honey later.

Mr. H. B. Coyner of Fairfax, Va., writes: "I have one of your queens that last year made eight supers, 32 sections to super, full of honey and her bees did not build any queen-cells. I have several more of your queens that did well."

Queens of Quality at a Low Price.

Untested, 1 to 12.....$1.00 each
Select Untested, 1 to 12..... 1.25 each
Select Tested, 1 to 12..... 1.75 each
Virgins (not mated) ..... .40 each
Special Brood Frames, per 100..... 5.75

Wings clipped free on request. Safe arrival and satisfaction guaranteed in U. S. A. and Canada.

Ohio Valley Bee Company

CATLETTSBURG, KY.

QUEENS 75c

BY RETURN MAIL

Mr. Beekeeper, now is the time to give NORMAN BROS.' 3-banded Italian Queens a trial.

Head your colonies with a 75c queen, not a cheap queen but a queen of the best at a cheap price and watch them build up and prove to your satisfaction. You risk not a brown penny; if you are not satisfied, just return them, and we will replace or refund your money. Isn't this a fair proposition to any one that purchases queens? When you introduce NORMAN BROS. queens, beekeepers, you can feel assured you have a good queen, one that will do her duty and as good as can be bought for the money; you will have a queen which is backed by years of improving and selecting from the finest mothers and mated to drones that are selected. Our bees are hardy, prolific, disease-resisting and honey-gatherers.

PRICES JUNE AND JULY.

	1	6	12	100
Unt. Queens	$0.75	$4.40	$8.50	$65.00
Select Untested ...	.90	5.25	10.00	75.00
Tested Queens	1.50	9.00	17.00	
Select Tested	1.75 each.			

Guarantee.—We guarantee pure mating, safe arrival, free from disease and satisfaction in U. S. A. and Canada.

NORMAN BROS. APIARIES

NAFTEL, ALABAMA

Selected Queens

QUEENS BY RETURN MAIL

Our queens are giving wonderful results; their colonies are producing large yields of honey. Try them and be pleased as others are. Mr. J. C. Smith, Washington, D. C., states: "I have never made a purchase that gave the satisfaction that your queens did; their quality was extremely high and I have never had better." We guarantee every queen we ship to give entire satisfaction. Pure mating, safe arrival and prompt delivery guaranteed. Wings clipped free of charge on request.

PRICES.

Select Untested .....$0.75 each
50 or more ..... .65 each
Select Tested ..... 1.50 each

Hayneville Apiary Company

Hayneville, Alabama

DO YOU WANT A BIG HONEY CROP?

THEN HEAD YOUR COLONIES WITH OUR IMPORTED STOCK FROM ITALY.

Mr. Albert Peterson, Turtle Lake, Wis., writes: "Your queens have given me the very best satisfaction. My best colony last year was headed with one of your queens which stored 325 pounds of clover honey."

THAGARD'S ITALIAN QUEENS

BRED FOR QUALITY

have stood the test with backlotters and America's greatest honey producers. They are hardy, gentle, prolific and wonderful honey-gatherers.

Untested: 1 to 4, $1.00; 5 to 11, 80c; 12 to 25, 75c. Write for prices in large lots.

THE V. R. THAGARD CO.

GREENVILLE, ALA.

CARNIOLANS

of a pure and well-bred strain show the following traits to a high degree: They are very prolific at all times, very gentle, build very white combs, gather but little propolis, little inclined to rob, are a long-tongued bee and will work industriously on red clover, are especially fine workers on buckwheat, resist brood diseases as well as any race or strain of bees, and do not swarm excessively if intelligently managed. Ask for my free paper, "**MERITS OF THE CARNIOLAN BEE.**" It outlines successful plans of managing this race of bees.

I can supply Carniolan queens of my own strain, 12 years' selection and breeding; **JON STEGAR, CARNIOLA, EUROPE, strain.** Breeders imported 1923; Italian, C. B. Hamilton strain. The mother of this breeder produced 577 finished sections of comb honey.

1 select untested queen (either strain)..$1.10
12 select untested queens (either strain) 12.00
Select Tested Queen (either strain) 2.25

During July at the close of the honey flow is the best time to requeen in the northern states.

Safe arrival by mail and satisfaction guaranteed.

ALBERT G. HANN
GLEN GARDNER, NEW JERSEY.

BIG, BRIGHT, NORTHERN-BRED ITALIAN QUEENS

Bred for beauty and honey-gathering qualities. Untested, $1.00 each; $11.00 per dozen.

M. P. LeMUNYON

R. F. D. No. 3, CASSOPOLIS, MICHIGAN.

—QUEENS OF—

Moore's Strain

OF ITALIANS PRODUCE WORKERS
That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens, $1.00; 6, $5.00; 12, $9.00. Select Untested, $1.25; 6, $6.00; 12, $11.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, QUEEN BREEDER,
Route 1, Morgan, Kentucky.

Queens CONNECTICUT *Queens*

UNTESTED JUNE 1.
We ship only the highest quality three-banded Italian Queens and Bees.

1	$ 1.00
12	11.00
50	47.00
100	90.00

TRY US FOR QUALITY AND SERVICE.

QUEENS NEA

We guarantee satisfaction, safe arrival and freedom from disease or money refunded.

PACKAGE BEES AND NUCLEI WITH QUEEN.

2 lbs. $4.50 ea., 10 or more,	$4.00 ea.
3 lbs. $5.50 ea., 10 or more,	$5.00 ea.
2-frame Nuclei	$4.50 ea.
3-frame Nuclei	$5.50 ea.

THE NEW ENGLAND APIARIES
NEW BRITAIN, CONNECTICUT

Townsend's Bulletin No. 15

Last year's experience with the SHAW "line-bred" stock of three-banded Italian queens, at Loreauville, La., "where the good queens come from," proved that with our two small yards of but 300 colonies and nuclei, it will be impossible for me to furnish Untested Queens for this season's sales, so I have decided to sell Untested Queens from several Gulf States breeders of note, and if anyone is in need of 25 or more Untested three-banded Italian queens, you will make a mistake if you do not write me and get my wholesale prices on same.

Now I have a little surprise for the intending purchaser of some SHAW "line-bred" queens. My correspondence proves conclusively that there are many of the common beekeepers who would like to try out the SHAW strain of bees, but who did not dare invest $10.00 for a breeding queen for fear they would lose her in introduction, and the surprise is, that I am going to sell genuine SHAW "line-bred" tested queens during the months of July, August and September for only $2.00 each or six for $10.00. This is the lowest price that SHAW stock ever sold for and I expect every queen to be spoken for as fast as they can be reared and tested out. Our last year's breeders that I advertised during spring are all sold and the tested queens offered above will be of this year's breeding. My queen-breeder is instructed to mail none but good queens to anyone. Orders will be booked as received and the queens mailed out in rotation, but as I expect many more orders than I will have queens to supply, anyone's order not filled by October 1st, money will be returned. With the idea of placing the SHAW "line-bred" stock of three-banded Italians in as many different hands as possible, I will not accept an order for more than one dozen queens from a person during this season. They will be mailed in the large export cage and safe delivery guaranteed. Note that the office work will all be done here at Northstar, Michigan, and the queens mailed direct to you from my breeding yards at Loreauville, La. E. D. Townsend, Northstar, Michigan.

The Hardie Uncapping Knife

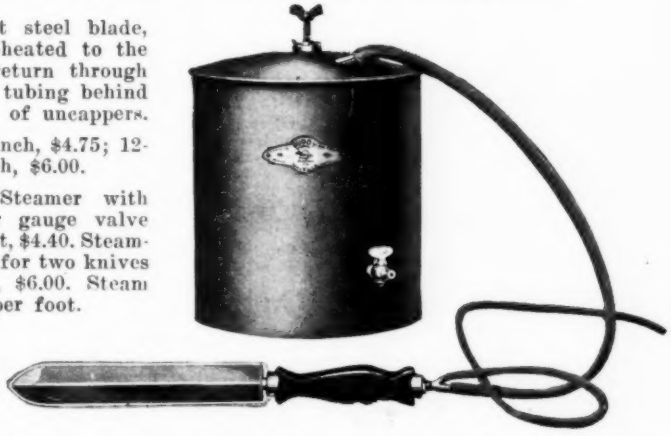
"SOMETHING NEW AND BETTER THAN THE ORDINARY."

Extra long, straight steel blade, double-edged, steam-heated to the point. Intake and return through the handle. Rubber tubing behind and out of the way of uncappers.

Three sizes: 10½-inch, $4.75; 12-inch, $5.50; 13½-inch, $6.00.

3-gallon Copper Steamer with safety valve, water gauge valve and knife attachment, $4.40. Steamer with attachments for two knives with shut-off valve, $6.00. Steam rubber tubing, 15c per foot.

Highly recommended. See January "Gleanings in Bee Culture," page 28.



Ruddy Manufacturing Co., Ltd.

Beekeepers Supplies - Brantford, Ontario, Canada

Early Order Discounts

EVERYONE, including the beekeeper, is looking for a way to save money—this is one of them.

SECTIONS, SECTION HOLDERS, SEPARATORS, HOFFMAN BROOD FRAMES—ALL AT LIBERAL DISCOUNTS. Write in for quotations on the supplies you need for the 1924 season.

Orders forwarded immediately on receipt. Newly manufactured stock on hand with more in the process.

Charles Mondeng

146 Newton Ave. N. and
159 Cedar Lake Road.
MINNEAPOLIS, MINN.

HONEY CONTAINERS

2½-lb. cans, per carton of 100	$4.25
5-lb. pails, per carton of 50	3.50
5-lb. pails, per carton of 100	6.75
10-lb. pails, per carton of 50	5.00

Above packed in cartons which are dust-proof, light and easy to handle, keeping your cans and pails clean until you are ready to use them.

5-lb. pails, per case of 12	$1.10
10-lb. pails, per case of 6	.90
60-lb. cans, 1 per case	.90
60-lb. cans, 2 per case	1.25

Above packed in wooden reshipping cases.

GLASS JARS

8-oz. honey capacity, tall or fluted, per case of 24	$1.05
8-oz. honey capacity, medium, per case of 24	.95
16-oz. honey capacity, tall or fluted, per case of 24	1.35
16-oz. honey capacity, medium, per case of 24	1.25
32-oz. honey capacity, per case of 12	1.00

All above prices f. o. b. Reedsville, Wis. Write for prices on larger quantities of pails and glass jars, stating number and sizes wanted.

A. H. RUSCH & SON CO.

REEDSVILLE, WISCONSIN

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.

From 1897 to 1924 the Northeastern Branch of The A. I. Root Company.
PROMPT AND EFFICIENT SERVICE.

Because—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1924 catalog send name at once.

New Catalog Ready
Beekeepers' Supplies

Root's Goods of High Quality. Three-ply foundation, standard stock of supplies kept on hand for prompt shipments. Send us your inquiries and orders early for quick action.

J. NEBEL & SON SUPPLY CO.
Montgomery County. High Hill, Mo

NOTICE OF REMOVAL

On and after March 1st, I shall be located in my new warehouse at 237 Park St., Medford, where I shall continue to carry a full line of supplies for the beekeeper. 1924 catalog on request.

H. H. JEPSON

237 Park St. Medford, 55 Mass.
(Formerly at 182 Friend St., Boston.)

Patents Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON.
McLachlan Bldg., Washington, D. C.

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.
733-783 Pike St. Cincinnati, O.

FREE Samples & Roofing Book

Root Quality Supplies

East St. Louis, Ill.

O. G. RAWSON, 3208 Forest Place.
Send for Catalog.

Authorized Distributor for St. Louis district.
BEES AND QUEENS.

4%
BANKING BY MAIL

THE HOME OF THE HONEY-BEE

NOW—
—when you have money coming to you regularly, is the best time for you to set aside some definite amount to build up a surplus for future years. Our Banking by Mail plan enables you to deposit your Savings in safety at 4% compound interest.

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO
A. T. SPITZER PRES. E. B. ROOT VICE PRES. E. B. SPITZER CASHIER

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. Falconer Mfg. Company
Falconer, New York (near Jamestown)
"Where the best beehives come from."

Ask for catalog. *Booklet, "Simplified Beekeeping for Beginners," free.*

SERVICE

The most important factor in giving the beekeepers complete **SERVICE** is transportation facilities. Syracuse is located right in the **CENTER** of the **BEST BEEKEEPING** territory in the U. S. A. Motor trucks are leaving Syracuse daily going in every direction, freight and express service are the best. Seventy pounds can be sent by parcel post. We also have the best roads to be found anywhere. If you own an auto you can drive into Syracuse, and know that you will get the supplies that you need and be back home the same day. Drive right in to our place. **NO PARKING LIMIT.**

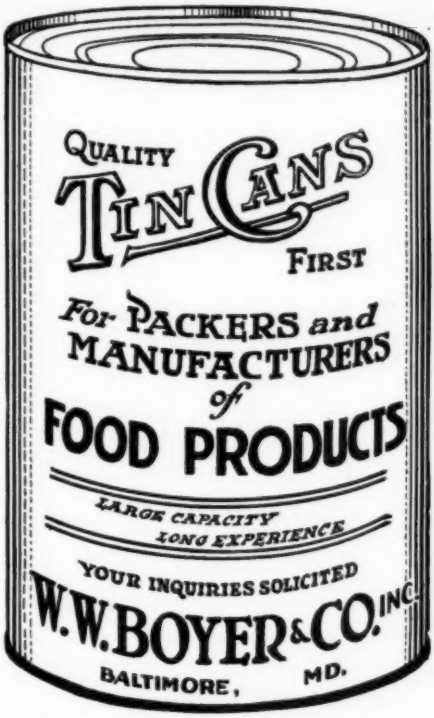
Complete stock of **ROOT QUALITY SUPPLIES** all the time.

A. I. ROOT CO. of SYRACUSE

1631 West Genesee Street,
SYRACUSE, N. Y.

SERVES YOU BEST

ASK DAD, HE KNOWS.



Schenectady

is the best place to buy

Bee Supplies

in Eastern New York.

*****

A Full Stock of

Root QUALITY BEE SUPPLIES

*****

SEND IN YOUR ORDER NOW.

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Schenectady Bee Supply Co.

242 UNION STREET.
SCHENECTADY, N. Y.

Bee Supplies

o o o o o

We make a specialty of manufacturing comb-honey sections and ship millions of sections each year to all parts of the country. Samples sent free upon request. We also manufacture comb-honey shipping cases and section holders in large quantities.

To complete our line we carry a full stock of the well-known "Root Quality" hives, bodies, supers, frames, Airco three and single ply comb foundation and other goods. Send us your orders; we are prepared to give you the best quality and service at all times.

Write for our free illustrated catalog.

AUGUST LOTZ CO.

BOYD, WISCONSIN

MANUFACTURERS OF
"BLOSSOM-SWEET"
AND
BADGER BRAND
5 and 10 lb. Honey Pails.

We specialize in 5 and 10 lb. round pails and 60 lb. square cans. Plain and Lithographed cans of all descriptions.

WILKES-BARRE CAN CO.
ESTABLISHED 1856
WILKES-BARRE, PENNA.

Italian Queens

Can also furnish a few Goldens. Untested, $1.00 each; 6, $5.50; 12 or more, 90c each. Satisfaction, prompt delivery and safe arrival guaranteed.

RONALD KIRK, ROCKTON, PA.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1924.

1 Untested Queen, $1.00; 1 Tested Queen, $1.50; 1 lb. package of bees, $2.00; 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50. Nucleus, per frame, $1.50; 1 additional pound of bees with nucleus, $1.00. No disease, safe arrival guaranteed; bees inspected.

J. W. SHERMAN, VALDOSTA, GEORGIA.

Queens
Queens
Queens
Queens

Pure three-banded leather colored ITALIAN QUEENS. Bred from a mother that has never ISSUED A SWARM. The first to BUILD UP in the spring. Gathered MORE HONEY than any colony in the apiaries, and VERY GENTLE. A record which is seldom equaled.

	1 to 5.	6 to 11.	12
Untested	$1.00 each.	$0.90 each.	$0.80 each.
Sel. Unt.	1.35 each.	1.20 each.	1.00 each.

Safe arrival guaranteed.

A. E. WEGER, DELPHOS, OHIO

Mott's Northern-Bred Queens

Select Untested till June 1; $1.25 each; $1.00 each thereafter. Select, guaranteed pure mated, $1.25 each. Select Tested, $2.00. Virgins, 50c. 1 and 2 pound packages in June. 172 miles east of Windsor, Ontario. Save two days' trip from the far south.

E. E. MOTT, Glenwood, Mich.

JUNE AND JULY

is the time to try our high-grade Italian queens, guaranteed to satisfy or your money back. $1.00 each, $10.00 per dozen, $80.00 per hundred. You will be pleased with our stock. J. J. SCOTT, CROWVILLE, LA.

THREE-BAND ITALIAN QUEENS

UNTESTED, 75c EACH; 50, AT 70c EACH; 100, at 65c EACH. TESTED. $1.50 EACH. EXTRA-SELECT, $3.00 EACH. Safe arrival and satisfaction guaranteed.

D. W. HOWELL, SHELLMAN, GEORGIA

2 AND 3 POUND **PACKAGE BEES** 2 AND 3 POUND

NONE BETTER AT ANY PRICE.

2-lb. package of Italian Bees with select Italian queen.....$5.50; 5 or more, $5.00
3-lb. package of Italian Bees with select Italian queen.....$6.50; 5 or more, $6.00
Special prices on quantity lots.
Receive FRESH bees, and SAVE express charges. Illustrated circular free.

VAN'S HONEY FARMS, HEBRON, IND.

American Beauty Italian Queens

Produce bees of superior quality. This year's breeder, selected from an 80-colony yard, gave a surplus of 100 lbs. by going one mile farther to a field of alsike clover. No other bees in this locality gave any surplus. These queens, on being mated to drones from the best high-producing strains, are gentle, hardy, very long-lived bees; much above the average in color. We guarantee purity and satisfaction. This is our 38th year. Untested, after June 15, $1.00 each. Tested, $2.00. Breeders, $5.00 and $10.00 each. No disease, safe delivery.

E. F. QUIGLEY & SON, Unionville, Mo.

GOLDEN ITALIAN QUEENS

1 Untested Queen $1.00
1 Tested Queen $2.00

Satisfaction guaranteed.
Queens ready by June 1.

J. F. MICHAEL
R. F. D. 1. WINCHESTER, IND

Italian Queens
MURRY QUALITY

Am only offering untested queens for sale now, but they are beauts. **One untested, 90c; 12, $9.50; 50 or more, 75c each.**

H. L. MURRY, SOSO, MISSISSIPPI.

Queens---Rhode Island---Queens

Italian Northern-bred queens. Very gentle and hardy. Great workers. Untested, $1.25 each; 6 for $7.00.

Queens delivered after June 1.

O. E. TULIP, ARLINGTON, RHODE ISLAND. 56 Lawrence Street.

5-Gallon Cans, Selected Second Hand.

We have an accumulation of choice clean selected empty honey cans, two in a case, which may be safely used again for any grade of honey. We offer while they last at $5.00 for 10 cases, $22.50 for 50 cases, 100 lots or more at 40c a case.

The A. I. Root Co., Medina, Ohio.

TOO LATE FOR CLASSIFICATION.

FOR SALE—175 colonies of bees, most of which are in three-story hives, prepared for the June clover honey flow, together with all modern equipment, including excluders, bee-escapes, chaff trays, tanks, can, Peterson capping melter, 4-frame power extractor and engine, etc. Said bees are in or have their use 100 Buckeye hives, 100 two-story standard 10-frame hives, 150 machine-made 10-frame supers, over 100 8-frame standard Root hives, besides hundreds of standard shallow supers for comb and extracted honey. All this for $2000, together with all the honey in the hives. These bees are in northern Ohio, and as I have not seen them since May they are not guaranteed free from disease, but if disease is found when bees are bought such colonies will be taken out and money refunded accordingly. H. C. Lane, West Berne, N. Y.

FOR SALE OR EXCHANGE—Nine-room house on 50-acre farm, half woodland, bees, hives, fixtures, extractor, Barnes saw, etc., also poultry. Fine sumac location. Bees guaranteed free from disease. $5000. Photo on request. Frederick Holtke, R. F. D. No. 2, New Paltz, N. Y.

FOR SALE—Hive bodies, bottom boards, inner covers, outer covers, queen excluders, etc. E. D. Hansen, 308 N. Prospect Ave., Park Ridge, Ill.

MY five-banded golden queens will be ready April 1. 1 queen, $1.00; 6 queens, $5.50; 12 queens, $10.00. W. W. Talley, Greenville, Ala., Rt. 4.

SELLING Italian queens, $1.00; 3-frame nuclei, ú5.00; one 3-frame nuclei nd new 10-frame hive, $9.00, with order for $50.00. Hive free. Hickory Shade Apiary, Otterville, Mo.

SELLING 100 10-frame 1½-story hives, complete, new; 200 used supers, 8 and 10 frame. Best offer or entire lot, $600. Hickory Shade Apiary, Otterville, Mo.

FOR SALE—A No. 1 water white clover honey in new 60-lb. cans, 11c, in second-hand cans, 10½c, f. o. b. Moville, Iowa. Cash with order. Satisfaction guaranteed. Virgil Weaver & Son, Moville, Iowa.

WANTED—Small 2-frame extractor. State condition and price. Thos Kennedy, Mt. Sterling, Ky.

HONEYMADE NUT CRUSH. A very delicious candy that every beekeeper should eat. Healthful and nourishing. Contains no cane sugar. Dozen 10c bars, $1.00, three dozen, $2.80, postpaid. Sell this candy to your honey customers at good profit. Will make special prices to agents, or will exchange for honey. Write now. Sawyer Bros., R. D. No. 3, Portsmouth, Va.

ATTENTION! Colonies ready for a honey flow and are forced to sell. Our hives are noted for their high yield of honey, a number having produced 400 lbs. and over last season. Standard ten-frame hives, $11, also extra supers of brood. Buckeye hives, $15, also extra supers of brood. All colonies guaranteed free from disease. Heating tank to prevent granulation of honey and bottling same, capacity, 40 gallons. Portable honey-house, everything in equipment to be sacrificed for a quick sale. Come early and pick what you want. Anderson Bros. & Company, Bee Farm, Kedzie Ave. near Bryn Mawr, Res. 3043 Belle Plaine Ave., Chicago, Ill.

Tumblers at 2c Apiece

We have a limited amount of 6½-oz. glass tumblers, packed in barrels, 40 doz. to a barrel, with tin caps and waxed paper liners for same. While they last, we will sell these excellent honey containers at $9.60 a barrel. First come, first served.

THE A. I. ROOT COMPANY,
West Side Station, Medina, Ohio.

ACHORD QUEENS

Splendid honey-producing stock. Bred in two of the largest, best-equipped queen-rearing apiaries in the South. Vigorous, nicely marked, good natured, three-banded Italians. Promptly mailed to you in large, clean cages. Safe arrival guaranteed.

Select untested, $1.00 each; 5 for $4.50; 10 for $8.00; 20 or more, 75c each. Select tested, $1.50 each.

Large or small orders filled with equal promptness. Please ask your rural carrier to notify you of their arrival so they will not be left in a hot mail box.

W. D. ACHORD

FITZPATRICK, ALABAMA.

Queens Cheaper

67½c Each in Hundred Lots.

Time to do that wholesale requeening. "Spring management should be done for the most part in the fall of the preceding year." This truth is coming home to more and more of the extensive and wide-awake beekeepers every year. GOOD QUEENS ARE REQUISITE FOR GOOD WINTERING. One of our customers says the following:

"Gentlemen: I wish to congratulate you on the hardiness of your bees. I outdoor wintered 210 colonies, and came out with 203 strong ones and three weak ones. Considering that we did not have many warm days, and temperature as low as 18 degrees below zero I consider it mighty good. Your bees have proven themselves hardy, prolific and hustlers. And above all, I am glad to say that Jensen's stands for a square deal. If you will look over your past records you will see that I have been a customer of yours for some time and hope to remain one."—Herbert J. Link, LaPorte, Ind.

New prices: Untested, each, 90c; dozen, $9.00; hundred, $67.50.

We guarantee: Pure mating, freedom from disease, safe arrival and satisfaction. We do not guarantee introduction, but will make prompt replacement of any queens returned to us in the original cage, just as received through the mail.

"WE CARE FOR YOUR QUEEN WANTS."

Jensen's Apiaries

Crawford, Miss.

Knee Deep

Mack's Bees are now knee deep in clover and busily engaged in pulling hundreds of the very finest queen-cells. These cells will produce queens of the highest quality and they will soon be on their way gaining him an endless number of new customers. Please remember that a trial order will convince you where to place your future orders, and that you will be an enthusiastic booster of Mack's Queens and his unequaled service. Queens sent by return mail or soon thereafter. Postage paid on queens everywhere.

THREE-BAND ITALIANS ONLY.

	1to 49.	50 to 99.	100 up.
Untested	$1.00 ea.	$0.95 ea.	$0.90 ea.
Sel. Untested..	1.25 ea.	1.20 ea.	1.15 ea.

Everything guaranteed but safe introduction.

Herman McConnell

(THE BEE AND HONEY MAN)

Robinson, Illinois

Requeen Now

with young, prolific queens of a known honey-gather i n g strain, which means strong colonies to go into winter quarter and strong colonies to gather next season's crops of honey.

Sel. Unt., 1 to 9, $1 each; 10 or more, 90c each.

Select Tested, $2.00 each.

Can ship by return mail. If ordered three weeks or more in advance, deduct 25c per queen.

Frank Bornhoffer

TOBASCO, OHIO.

$1 and $1.50

MAJOR'S IMPROVED QUEENS OF SUPREME QUALITY.

Three-banded Italian Queens.

So many beekeepers lose good queens in introducing them. After several years of using push-in-the-comb cages, I am thoroughly convinced the push-in-the-comb cage is the only cage to use for safe introduction of queens. For that reason I have invented a push-in-the-comb cage, one that will go through the mail with candy, bees and queen already in the push-in-the-comb cage. No extra work to introduce queens in my new cage. The kind of letters I receive daily:

"Duanesburg, N. Y., July 12, 1923.
"H. N. Major, South Wales, N. Y.

"Dear Sir—The queens arrived in fine shape and are dandies; this is the third season I have ordered queens from you. I find that your bees are hustlers, gentle, evenly marked and, the best of all, they winter well in this cold climate. In the last eight years I have had queens from over a dozen queen-breeders, and I consider yours the best. I wish I had my 275 colonies all headed with your queens. Respectfully yours, Seward Van Auken."

I guarantee pure mating, safe arrival, free from disease. All orders greatly appreciated and acknowledged the same day as received. Order now to avoid delay.

Select untested queen in my push-in-the-comb cage, $1.50 each. Select untested in small mailing cage, as we always used, $1.00 each. Make all foreign money orders payable to post office of East Aurora, N. Y. (not including Canada).

H. N. MAJOR, SOUTH WALES, N. Y.

Collier's High-Grade

Italian Queens

By Return Mail

If you want first-class bright Italian queens send your orders to me. My aim is quality, quantity and quick service. Your money's worth or your money back. Safe delivery guaranteed in U. S. A. and Canada.

PRICES OF QUEENS.

	1	6	12	100
Untested	$.80	$4.50	$8.50	$65.00
Sel. Unt.	1.00	5.50	10.00	75.00
Sel. Tested	2.50 each.			

POUND PACKAGE WITH SEL UNT. QUEENS.

	1 to 12	12 or more.
2-lb. packages	$4.00 each	$3.75 each
3-lb. packages	5.00 each	4.50 each

D. E. Collier, Ramer, Ala.

Connecticut Valley Apiaries

OFFER YOU "PRODUCTION BRED" ITALIAN BEES AND QUEENS

From queen and drone mothers that are carefully selected. Our stock is hardy, gentle, very prolific and is winning favor as a honey-producing strain wherever it is introduced, both here and abroad.

UNTESTED QUEENS: 1, $1.00; 12, $10.00; 50, $40.00; 100, $75.00.

A. E. Crandall, Berlin, Connecticut

YOU BUY *BEES AND QUEENS* IN ONE OF TWO WAYS

? *On Trust or On Certainty* 4-hands

You either know you are going to get good queens and bees or you hope you are. Hope may result in poor stock, delay, loss of colony and no honey. Knowledge means first-class stock, prompt delivery, courteous treatment, satisfaction and profit.

When you mail your order to FOREHAND you know you are buying QUEENS AND BEES on certainty. How about your next order?

Untested queens, 1 to 12, $1.00 each; 12 to 25, 85c each. One lb. bees with queen, $3.25; two lbs. bees with queen, $5.25; three lbs. bees with queen, $6.25; 10 or more packages of either, 25c less per package. POSTAGE PAID ON BEES AND QUEENS. Satisfaction and safe delivery guaranteed. REMEMBER THE PRICE IS PREPAID ON PACKAGE BEES. Write for prices on large lots.

N. FOREHAND -:- GONZALEZ, FLORIDA

Success

in selling **QUEENS**, like success in any other business, is largely the result of a sincere effort to give satisfactory service.

Prices for July and August.

Untested, select, $1.00 each; $10.00 per dozen; $80.00 per 100. Tested, $2.00 each; $18.00 per dozen. We have either Golden or three-band stock.

Pure mating of queens, freedom from disease and safe arrival of all queens.

Middle Tennessee Apiaries
Columbia, Tennessee

Leininger's Strain of Italians

We have been queen-breeders for nearly 50 years. In all this time we have tested nearly every strain of Italian bees in the U. S. A. By this careful selection and breeding we have succeeded in producing a strain of bees surpassed by none but superior to many, bees that are gentle and great honey-gatherers.

Therefore if you buy queens from us you may be assured that back of them are nearly 50 years of careful breeding for the production of honey.

As we are located in a red clover belt, it is but natural that our bees should have a long-tongue reach.

We will sell queens from this superior strain as follows:

Untested, 1 to 5, $1.00 each; 6, $5.50; 12, $10.50; 100, $85.00.

Tested, $1.50 each; select breeders, $5.00 to $10.00 each.

Safe arrival and satisfaction guaranteed.

Fred Leininger & Son
Delphos, Ohio

QUEENS QUEENS
SUPERIOR ITALIAN QUEENS
STOP! LOOK! LISTEN!

It is now time to consider what queens will prepare your colonies for winter and your 1925 crop. After you have decided what increase you will make and what colonies you will requeen and when will be the best time to do this work, order your queens so you will not be disappointed. We are going to tell you what we have; you can be the judge whether or not you can afford to risk us with your orders for QUEENS. We have everything else out of the way and not a thing to do but take care of your orders for queens. We have 2000 nucleus mating queens. We have every bit of this equipment in the best possible condition for producing the most and ABSOLUTELY THE BEST QUEENS THAT IT IS POSSIBLE TO PRODUCE. Everything that forethought can supply is ready to handle your order to your entire satisfaction. We have sufficient and competent office help that will acknowledge every order, whether for one or one thousand queens, and advise you when you can expect your queens. Most of the time we are able to ship orders of 100 within two days of receipt. If you are in a rush, get your bank to wire night letter for queens you want, and guarantee payment. The time you will save will more than pay for the message.

ONE UNTESTED ITALIAN QUEEN.....$1.00; ten or more, $0.75
ONE TESTED ITALIAN QUEEN..... 1.25; ten or more, 1.00

Special prices on lots of 100, delivered as you want them.

A FULL LINE OF SUPPLIES. SEND FOR CATALOG.

THE STOVER APIARIES, MAYHEW, MISS.

QUEENS KNIGHT'S QUEENS QUEENS

are Line-Bred, Pure Three-Banded, Leather-Colored

For hardiness, prolificness, gentleness and honey-gathering qualities they cannot be excelled. Mr. C. F. Brown. Fairchild, Wis., writes: "The colonies headed with your queens wintered the best of any of them. Am 68 years old, having handled bees for 52 years. Think I am competent to know what constitutes a hardy strain. Yours are the best I ever owned."

Prices Balance of Season. Select (one grade) Untested.

1 to 4 inclusive	$1.00 each
5 to 9 inclusive	.90 each
10 to 24 inclusive	.80 each
25 or more	.75 each
Tested Queens	2.00 each

Shipment can be made by return mail or on dates to suit purchaser. Safe arrival, pure mating, perfect queens, and perfect satisfaction guaranteed. No disease.

JASPER KNIGHT, HAYNEVILLE, ALABAMA.

Lockhart's Silver-gray Carniolans

41 years of experience, breeding this wonderful race of bees; 37 years a breeder and importer of queens. They are very hardy, gentle, prolific, great workers and builders of very white comb; use mostly wax in place of propolis. Not inclined to rob like Italians; winter extra well and build up quickly in spring. Prices of queens for July to November: Untested queens, $1.00 each; 6, 95c each; 12, 90c each; 25, 80c each; 50 or more, 75c each. Select Untested Queens, $1.50 each; 6, $1.45 each; 12, $1.40 each; 25, $1.25 each; 50 or more, $1.00 each. Tested Queens, $3.00 each. Select Tested, $5.00. Breeders, $10.00. Safe arrival and satisfaction guaranteed in U. S. and Canada. No foul brood here.

F. A. Lockhart & Co., Lake George, New York

Italian Queens 50c

Superior quality. Pure three-banded Italians. Good as the best.

G. H. MERRILL, PIEDMONT, S. C.

Gray Carniolans

Prices of queens: 1 untested, $1.50; 2 or more, $1.25 each. Select untested, $2.00; 2 or more, $1.50 each. Finest of stock, domestic or imported strains. Write for free 8-page circular.

W. A. HOLMBERG, DENAIR, CALIF.

Goldens Only

Untested: One, $1.00; 6, $5.00. Select Untested: 1, $1.25; 5, $5.00. Select Tested, $3.00. Breeders, $5.00. Quality and safe delivery or money back.

S. H. HAILEY

PINSON, TENNESSEE.

GET THE BEST

Pure 3-band Italian stock, a continuous honey flow from March to December, with 29 years' experience in rearing queens enable me to rear the best to be had. Untested: 1, $1.25; 6, $6.50; 12 or more, $1.00 each. 20 per cent books orders. **H. D. MURRY, Magnet, Texas.**

Today

When planning to requeen will you take into consideration the value, to you, of the planning we did 32 years ago?

When laying the foundation of our strain, THRIFTINESS was not forgotten.

In the 32 years that have passed careful selecting and breeding has improved on the fine qualities of our bees until today we have a strain of THRIFTY bees that is **surpassed by none but superior to many.**

We offer you the best of a life's work and study among the bees.

If today you decide to requeen with Forehand's Three Bands—the thrifty kind—you will experience satisfaction in your wintering and in the harvesting of your 1925 honey crop.

Untested Queens..1, 90c; 12 to 24, 75c; 25 to 99, 70c; 100 up, 60c
Select Untested .....1, $1.00; 12 to 24, 90c; 25 up, 85c

W. J. Forehand & Sons
Fort Deposit, Alabama

Citronelle Queens

BRIGHT ITALIANS

50c each

Untested, 50c each, any number, from 1 to 1000. Select Untested, 60c each. Tested, $1.25. We are offering our queens at the above special price in order to get more BEEKEEPERS to try our stock. SATISFACTION AND PROMPT SERVICE GUARANTEED.

The Citronelle Apiaries
Citronelle, Alabama

Send your order to H. & H. Thank you.

SUPPLIES

Send your order to H. & H. Thank you.

MADE BY THE DIAMOND MATCH COMPANY.

Special Prices

10-FR. DIAMOND HIVES, wood cover, reversible bottom-board, standard Hoffman frames. Per crate	$12.00
10-FR. STIRLING HIVES, metal cover, inner covers, standard Hoffman frames. Per crate	15.00
STANDARD 10-FR. HIVE BODIES, with Hoffman self-spacing frames. Per crate of five K. D	6.75
STANDARD 10-FR. HIVE BODIES, without frames. Per crate of five K. D	4.00
SHALLOW 10-FR. EXTRACTING SUPERS, with frames. Per crate of five K. D	4.50
10-FR. COMB SUPERS, No 1 style, 4¼x4¼x1⅞-inch, with section-holders, separators. Per crate of five K. D	4.50
SECTIONS, 4¼x4¼x1⅞-inch Beeway. A grade, per 500	6.00
B Grade, per 500	5.00
STANDARD HOFFMAN SELF-SPACING FRAMES, per 100	5.00
MEDIUM BROOD FOUNDATION (5-lb. packages), per lb.	.60
25 lbs. or more, per lb	.55
THIN SUPER FOUNDATION (5-lb. packages), per lb	.65
25 lbs. or more, per lb	.60

—o—

WE HAVE REDUCED OUR GLASS AND TIN HONEY CONTAINER PRICES.

2½-lb. Cans in crates of 100	$4.00 a crate
5-lb. Pails in crates of 100	6.50 a crate
10-lb. Pails in crates of 50	5.00 a crate
60-lb. Tins, new, 2 tins per case	1.00 a case

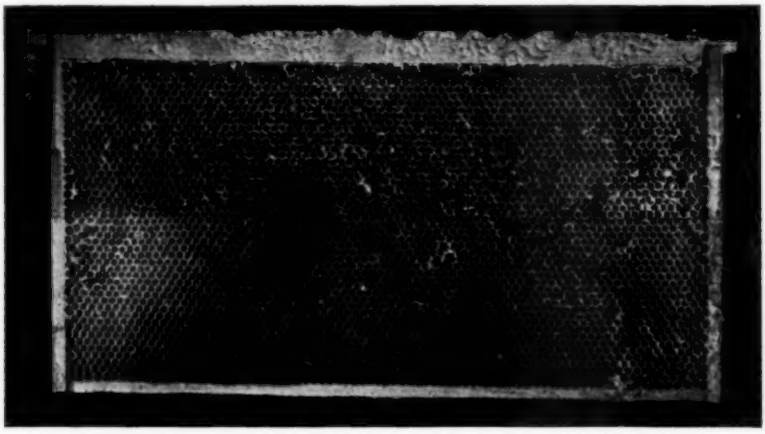
GLASS JARS WITH GOLD-LACQUERED CAPS.

8-oz. capacity, 3 doz. per carton	$1.35 per carton
16-oz. capacity, 2 doz. per carton	1.20 per carton
3-lb. or quart, 1 doz. per carton	.90 per carton

—o—

HOFFMAN & HAUCK, INC.

WOODHAVEN, NEW YORK



Extract at High Speed

Without Damage!

Extracting Combs Built from Wired Foundation Are Reinforced to Stand the Strain.

The above comb was taken right from a power extractor, after being extracted at full speed. The picture was taken on two big films which were then center spliced, where the line appears. This gives clear detail, showing how firmly the comb stood up; no buckles, no breaks, and no surface damage.

This was a new comb; not an old, tough one. Did you ever try to extract new combs, built the old way, from hand-wired foundation? High speed usually broke them in places; it often ruined them. Combs from Wired Foundation stand the test as though they had been in the brood nest three or four years.

When you plan your foundation buying--- consider what this means to you

DADANT & SONS, HAMILTON, ILLINOIS

Makers of Dadant's Famous Foundation
Wired — Plain — Surplus

Made only of Pure Beeswax.

Sold by dealers everywhere—write for name of nearest dealer.

Only One Hutzelman Solution

For the Treatment of American Foul Brood

To make this solution properly requires a complete knowledge of the chemistry of the ingredients used, as well as skill in the mixing.

o o o o

All new materials used by me in my solution are analyzed, re-processed, and refined, so as to avoid tainting the honey or poisoning the brood.

o o o o

Investigation has shown that out of forty-nine specimens of formaldehyde obtained on the open market, forty-eight contained decomposition products which are injurious to the honey and bees.

o o o o

Ordinary denatured alcohol as sold everywhere ought never to be used in the preparation of the alcohol-formalin solution, on account of the poisons it contains that would taint the honey or kill the brood.

o o o o

The solution I offer is guaranteed not to leave any trace of poison or foreign odor in the combs after drying.

o o o o

Patents pending in the United States and Canada.

For further information write

J. C. Hutzelman, M. D.

Glendale, Ohio

WOODMANS FAMOUS BEE-WARE

The Smoker

You Ought to Own

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

The **new Bingham Bee-Smoker is the most** efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

A. G. WOODMAN COMPANY

238 Scribner Avenue, N. W.
GRAND RAPIDS, MICH., U. S. A.

For sale by all G. B. Lewis Co. and Dadant & Sons agencies. They are also sold by many others in this and foreign countries. Insist on the best, the Bingham Smoker.

NEW BINGHAM BEE SMOKER
PATENTED

BIG SMOKE—With Shield.
Fire Pot, 4 x 10.

NEW BINGHAM BEE SMOKER
PAT.

DOCTOR.
Fire Pot, 3½ x 7.

LITTLE WONDER.
Fire Pot, 3 x 5½.

Sell it as Your Brand

Identify your honey—help its sale—build up steady trade. Pack it in a lithographed container with your own name on it.

HAVE you ever wished for a decorated can for your honey—but felt you couldn't afford it?

Here's what you've been looking for. It's brilliantly lithographed, with an appropriate design. It stays clean and bright.

And you get it at very reasonable cost, as it is a stock design, lithographed in economical quantities. Your nameplate goes in the space indicated. That makes it *your* package, displaying *your* honey.

It's worth looking into.

Write for sample and details

An eye-catcher on the dealer's shelf or counter. A silent salesman selling your honey all day long. 3 sizes—2½ lb. cans, 5 and 10 lb. pails.

American Can Company

NEW YORK CHICAGO SAN FRANCISCO PORTLAND, ORE.

American Can

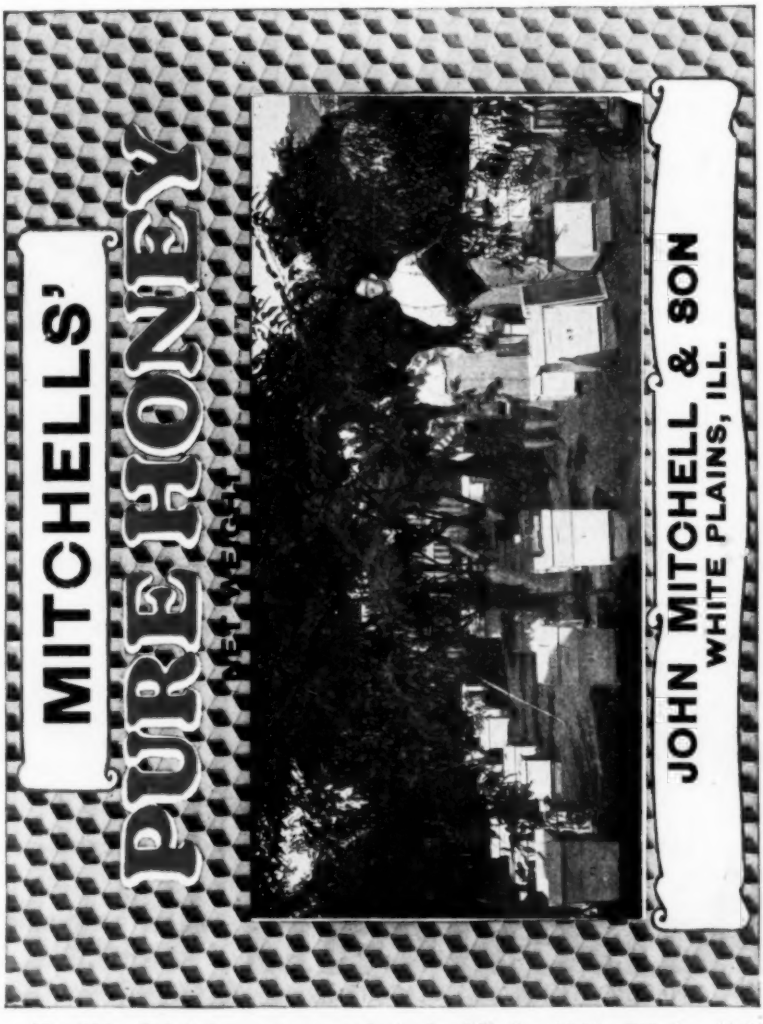
CONTAINERS OF TIN PLATE · BLACK IRON · GALVANIZED IRON · FIBRE

TRADE CANCO MARK

OUR NEW LABEL

It's a Beauty

Can be made your individual label by using picture of your own apiary in place of the one here shown.



No. 132.—Printed on ungummed stock—250 for $2.00; 500 for $2.90; 1000 for $4.50; each additional 1000, $3.50, using above picture; same prices if you furnish a cut. If you do not have our label catalog, we will be glad to send you one on request, showing 30 other designs.

The A. I. Root Co., West Side Sta., Medina, Ohio